A BOOK ON
MATHEMATICAL ASTROLOGY

Y.K. **BANSAL**

Edited and Revised by
K.R. Chari

गुरु वन्दना

ॐ अज्ञानतिमिरान्धस्य ज्ञानांजनशलाकया ।
चक्षुरुन्मीलितं येन तस्मै श्री गुरवे नमः ॥
मंत्रसत्यम् पूजासत्यम् सत्यमेव निरंजनम् ।
गुरुर्वाक्यं सदा सत्यम् सत्यमेव परमं पदम् ॥
अखंडमंडलाकारं व्याप्तं येन चराचरम् ।
तत्पदं दर्शितं येन, तस्मै श्री गुरवं नमः ॥
पितृ-मातृ-सुहृद्-बन्धु-विद्या-तीर्थानि देवता ।
न तुल्यं गुरुणाम् शीघ्रं स्पर्शमेव परम् पदम् ॥
गुरुर्ब्रह्मा गुरुर्विष्णु गुरुर्देवो महेश्वरः ।
गुरुःसाक्षात् परब्रह्म तस्मै श्री गुरवे नमः ॥
ध्यान मूलम् गुरुः मूर्ति पूजा मूलं गुरुः पदम् ।
मंत्रमूलं गुरुःर्वाक्यम् मोक्षमूलं गुरुः कृपा ॥
ब्रह्मानन्दं परमसुखदं केवलं ध्यानमूर्तिम् ।
द्वन्द्वातीतम् गगनसदृशम् तत्वमस्यादिलक्ष्यम् ॥
एकं नित्यं विमलमचलम् सर्वधी साक्षीभूतम् ।
भवातीतम् त्रिगुणरहितम् सद्गुरुं तन्नमामि ॥

Offering Prayers to the Lord Ganesha, Goddess Saraswati and the Nava Grahas

Dear Students,

1.1 We, the members of Bharatiya Prachya Evam Sanatan Vigyan Sansthan welcome you to the course for JYOTISHA PRAVEEN conducted by the Indian Council of Astrological Sciences (Regd.) Chennai, at 35 cities of India. Before we take you to the study of the subject namely 'Mathematical Astrology' through a series of specially designed course material to meet your requirements it is important to invoke the blessings of the Almighty God. Astrology, as you may be aware, is a divine science and therefore is very sacred.

1.2 The beginning of any auspicious deed is always preceded by offering prayers to lord Ganesha, who is also the lord of intelligence:

गजाननं भूतगणादिसेवितं कपित्थजम्बू फल सारभक्षणम् ।
उमासुतं शोक विनाशकारणं नमामि विघ्नेश्वर पादपङ्कजम् ।।

Gajaananam Bhootaganaadisewitam
Kapittha Jamboo phala saarbhakshanam
Umaasutam Shokavinaashakaaranam
Namaami Vighneishwara Paadapankajam

Which means :

I prostrate before the lotus-feet of lord Vighneshwara, the offspring of Uma, the cause of destruction of sorrow, worshipped by bhootaganas (the five great elements of the universe viz. fire, earth, air, water and sky) etc., who has

the face of a tusker and who consumes the essence of kapittha and jambu fruits.

1.3 Next, we pray to Goddess Saraswati who is the Goddess of Learning:

सरस्वती महाभागे विद्ये कमल लोचने।
विद्यारूपे विशालाक्षि विद्यां देहि नमोस्तुते ॥

Saraswati Mahaabhaagey Vidye Kamala Lochcme, Vidyarupey Vishaalaakshi Vidyaam Dehi Namostute.

Which means :

Oh Goddess you are most lucky and full of knowledge, you have lotus like big and beautiful eyes. You are giver of knowledge. Oh goddess Saraswati I bow my head to Thee, please give me knowledge and vidya.

▆ According to sage Parashara, one of the most venerable exponents of astrology, Lord Vishnu incarnated himself as the nine planets (Nava Grahas) from the Sun to Ketu. These incarnations of Lord Vishnu are related to the nine planets as follows :

1. The Sun	-	Shri Rama (belonging to the Solar Race, Surya Vansavali)
2. Moon	-	Shri Krishna (belonging to the Lunar Race, Chandra Vansavali)
3. Mars	-	Narasimha (Lion faced man)
4. Mercury	-	The Buddha
5. Jupiter	-	Vaamana (Dwarf)
6. Venus	-	Parsu Rama (Holder of axe and son of the Sage Jamadagni)
7. Saturn	-	Koorma (Tortoise)

8. Rahu   - Varaaha (Pig)

9. Ketu   - Matsya (Fish)

We, therefore now pray to the aforesaid Nava-Grahas or the nine planets who are the different incarnations of Lord Vishnu, to bestow various effects on living beings according to their past *Karma*.

<div style="text-align:center">

ब्रह्मामुरारी स्त्रिपुरान्तकारी भानु शशि भूमिसुतो बुद्धश्च ।

गुरुश्चशुक्रः शनि राहूकेतव कुर्वन्तु सर्वे मम सुप्रभातम् ॥

Brahmamuraari Tripuraantakaari,

Bhaanu Shashi Bhumisuto Budhashcha!

Gurushcha shukrah Shani Rahu Ketava,

Kurvantu Sarve Mama Suprabhatam!!

</div>

Which means :

> Oh! the creator Brahma, the preserver Vishnu, the destroyer Shankar (killer of demon Tripura Sur), the Sun *(Surya),* the Moon *(Chandra),* Mars *(Mangal,* son of earth), Mercury *(Budh* - Lord of wisdom), Jupiter *(Brihaspati* - Dev Guru), Venus *(Shukra* - Guru of demons, giver of worldly comforts), Saturn *(Shani* - son of Surya), Rahu and Ketu *(Chhaya Grahas* - nodes), I pray to you all to bestow your blessings upon me and make me the enlightened one.

1.5 Having offered our humble prayers to Lord Ganesha (the lord of *buddhi* or intelligence), Goddess Saraswati (the Goddess of all learnings and *vaani* or speech) and the nava Grahas (the nine planets who are the incarnations of lord Vishnu) for enlightenment through the study of this sacred and divine science, Astrology, we now proceed to study this all important part of Astrology viz mathematical Astrology. We have specially used the word 'all-important' for

mathematical astrology as because the sage parashara (Para 1.4 Supra) himself in his great work *Brihat parashara Hora Shastram* (shloka 39-40, chapter 27 dealing with evaluation of strengths or the *Spashtabalaadhaya*) while discussing with his disciple Maitreya about the virtues and qualities of a good Astrologer, so as to be eligible to issue fruitful predictions, has stressed and emphasized the need to achieve skill and proficiency in the mathematical aspect of Astrology. The aforesaid shlokas are reproduced below as these are to be remembered and practised in action by all astrologers and students :

गणितेषु प्रवीणो यः शब्दशास्त्रे कृतश्रमः ।
न्यायविद् बुद्धिमान् देशदिक्कालज्ञो जितेन्द्रियः ॥39॥
ऊहापोह-पटुर्होरास्कन्ध श्रवण सम्मतः ।
मैत्रेय ! सत्यतां याति तस्य वाक्यं न संशयः ॥40॥

"बृहत्पाराशरोराशास्त्रम्"

Ganiteshu Praveeno Yeh Shabdashashtre Kritshramah Nyayavid Buddhimaan Deshdikkaalagyo Jitendriyah Uhapohapaturhoraskandha Shrawan Sammatah Maitreya ! Satyataam Yaati Tasya Vaakyam na Sanshayah.

Which means :

O Maitreya, the words of one who has achieved skill in mathematics, one who has put in industrious efforts in the branch of grammar, one who has knowledge of geography, space and time, one who has conquered his senses, one who is skilfully logical (in estimation) and one who is favourable to astrology, will doubtless be truthful.

We will therefore advise our students to study each of these chapters carefully to acquire proficiency in Mathematical Astrology.

PREFACE

The revised and improved edition is in your hands. The first edition was published in October 1993. The course material prepared by the Sansthan for the students of Astrology is well appreciated by teachers and students both. The work of author does not need any recommendations or foreword. The readers are the best judges and until now this book has been placed in top position. The aim of Sansthan is to make available books on Astrology and Occult Sciences authored by honest, learned and experienced teachers at lowest cost, to propagate the Indian heritage. A large number of Scientists, Doctors, Engineers, Professors, MBA's, CA's etc have learnt astrology with the help of the books published by Sansthan. Sansthan has received many letters of appreciation, but do not want to publish them in any book which may unnecessarily increase the cost of the books. While reading these books the teachers get clarifications of doubts, the students feel the pleasure of getting oral teachings and understand the meanings of astrological sutras very easily. Sansthan is grateful to Shri M.N. Kedar for preparing the revised edition of this book again.

Sansthan cannot forget to thank Shri K.R. Chari, a top most faculty of ICAS who has taken the pains to do technical editing of the book.

Sansthan

CONTENTS

CHAPTER 1

ASTROLOGICAL TERMINOLOGY I

1.1 Under this topic 'Astrological Terminology' we propose to discuss and acquaint our students with various terms and their meaning, definition, etc. commonly used in astrology, particularly those used in mathematical Astrology. In addition, certain **astronomical** terminology will also be discussed in these lessons, to the extent these are used in mathematical astrology. A more detailed exposition of these astronomical terminology is available to the students in the book 'Astronomy Relevant to Astrology' by V.P. Jain.

1.2 The various terminology with which the students are expected to be familiar are as follows :

1. The solar system.

2. The earth

3. The equator of the earth

4. Northern hemisphere, and Southern hemisphere.

5. Geographical longitudes *(Rekhansha)*

6. Geographical latitudes *(Akshansha)*

7. Meridian of Greenwich as reference point at the earth's equator

8. Celestial sphere or the cosmic sphere

9. Celestial poles

10. Celestial Equator

11. Ecliptic or the Ravi Marga

12. Zodiac

13. Celestial longitude *(Sphuta)*

14. Celestial latitude *(Vikshepa)*

15. Declination *(Kranti)*

16. Right ascension *(Dhruva)*

17. Oblique ascension or *Rashimaan*

18. Equinoctial points

19. Precession of the equinoxes and *Ayanamsha*

20. Moveable and fixed zodiacs

21. The *Say ana* and *Nirayana* system

22. The Table of Ascendants

23. The Table of Houses

24. The Ephemeris

1.3 We will now take the above mentioned terms and discuss these one by one so as to make these terms clear to the students. It may however be mentioned here that a large number of the above mentioned terms are quite simple and self explanatory. Most of the students, particularly those who have studied geography as a subject during their school education, would be familiar with the terms mentioned above. Nevertheless we will discuss and explain all the above mentioned terms in a systematic manner so that the very concept of these terms is understood by the students.

1.4 The Solar System

Our Solar System is centered round the Sun. Nine planets viz. Mercury, Venus, Earth, Mars, Jupiter, Saturn, Uranus (or Herschel), Neptune and Pluto

alongwith belt of Asteroids revolves in elliptical orbits around the Sun.

In Hindu Astrology, the last three planet /. e. Uranus (or Herschel), Neptune and Pluto have no place. On the other hand the classical Hindu Astrology recognises the Moon and the two shadowy planets *i.e.* Rahu and Ketu (or the Moon's Nodes) as equivalent to planets. **Rahu and Ketu are not physical bodies but are mathematically calculated sensitive points of intersection of the orbits of the Moon and the Sun** (or in fact that of the Earth but which appears to be that of the Sun).

1.4.1 The planets Mercury and Venus are situated in the space between the Sun and the Earth. These planets are therefore known as **'Inner Planets'.** These are also known as **'Inferior Planets'.**
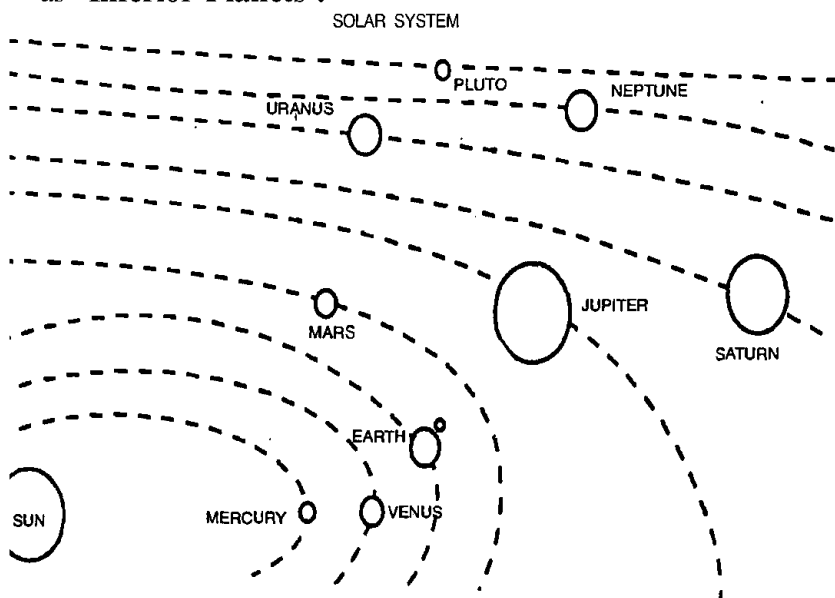
Figure 1

1.4.2 The other three planets namely Mars, Jupiter and Saturn are so situated in the space that their orbits are on

the outer side of the Earth. These Planets are therefore known as **'Outer Planets'** or **'Superior Planets'.**

1.5 The Earth

The Earth is ever spinning on its axis. In addition to its spinning, the earth is also revolving round the Sun. It is therefore always in a state of motion in the space at a speed of nearly 30 kms per second or 1,800 kms a minute or 9,46,08,000 kms per year.

1.5.1 In early times, the earth was believed to be the centre of universe of our solar system. It was thought that the Sun, the Moon and other planets (stars) actually revolved around the earth, as they appear to do. But now we know that the earth is a globe, that it rotates or spins on its axis and the **Sun and stars appear to revolve around it from east to west, because the earth is revolving around its axis from west to east.** This phenomenon can be best explained with the example of a moving train. When we look outside the window from a running train, the trees at a distance or the telephone poles, electric posts and other similar objects appear to be moving in the opposite direction to that of the train, which actually is not correct. We know that the trees, the telephone poles, the electric posts etc., all are fixed at a place. Similarly living on the earth's surface, we also keep on moving in the space with the same speed as that of the earth. The Sun which is actually stationary would appear to us to be moving in the opposite direction to that of the earth. As the earth is moving from west to east, the Sun and other stars in the space will appear to be moving in the opposite direction *i.e.* from east to west. This is what we actually observe also.

1.5.2 The axis of the Earth slants at an angle of about 23/4° from the perpendicular to the plane of its orbit. If the plane of orbit of earth is treated as horizontal, then perpendicular to this line will be known as vertical and then the axis of earth can be stated to be slanting at an angle of about 23 ½° (23 degrees 28 minutes to be precise) to the vertical.
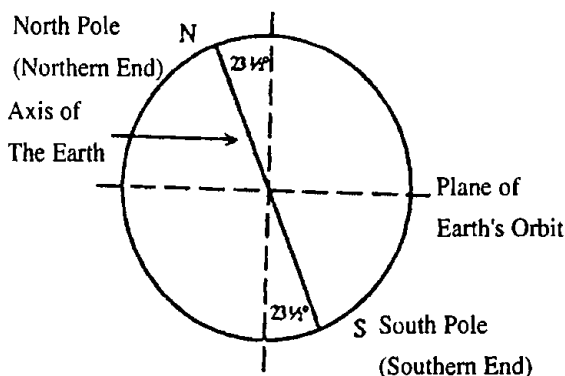
Figure 2

The axis of **the** earth is so **inclined that the northern end** of **the** axis always points **to the Pole Star or commonly known** as ***Dhruv*** *Tara*. Where the northern and southern end of the axis of earth meet the surface of the earth, those points are known as North and South Poles of the earth, respectively.

1.6 The Equator of the Earth

If we draw a plane passing through the centre of the earth and perpendicular to the earth's axis, it will cut the surface of the earth in a circle. This great circle on the surface of the earth is known as the Earth's Equator or Terrestrial Equator.

CENTRE OF THE EARTH   N   EARTH'S SURFACE

IMAGINARY PLANE
PASSING THROUGH
THE CENTRE OF
THE EARTH AND
PERPENDICULAR
TO EARTH'S AXIS

S
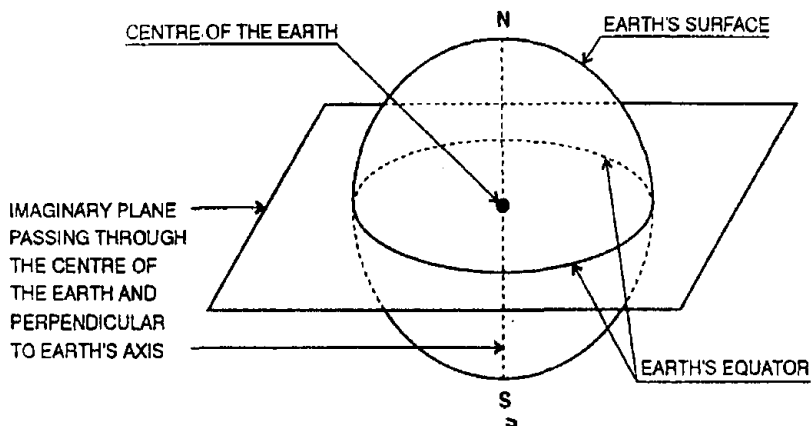
EARTH'S EQUATOR

Figure 3

1.7 Northern and Southern Hemisphere

We know that the globe of the earth is not a perfect sphere like a ball. In fact the earth's diameter along the equator is larger than its diameter along the axis due to the fact that the earth is slightly flattened at the poles whereas it is slightly bulging out at the equator. The shape of the Earth is comparatively more similar to that of an orange or a melon rather than that of a perfect sphere. Even then, for easy comprehension/calculations and understanding the various phenomenon, we consider the earth's globe to be a perfect sphere, though it is actually not so. In Para 1.6 above we have seen that the imaginary plane cuts the earth's surface in a great circle known as earth's equator. However, if the same plane was to cut the earth's globe (or the sphere) into two parts, each part will be exactly half of the sphere and will therefore be known as the Hemisphere. The hemisphere towards the North end of the axis of the earth is known as *Northern Hemisphere*. Similarly the hemisphere

towards the south end of the axis of the earth is known as *Southern Hemisphere*. Figure 4 illustrates the above phenomenon clearly wherein the two halves of the earth's globe have been shown separated at the plane of the earth's equator.
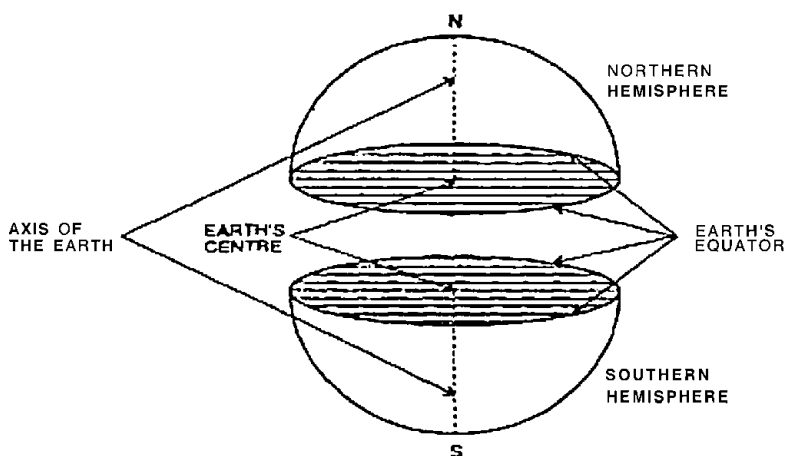
Figure 4

1.8   Geographical Longitudes *(Rekhansha)* And Geographical Latitudes *(Akshansha)*

In order to fix the position of an object or a point on a plane, we have to divide the plane by drawing two sets of parallel lines at equal intervals perpendicular to each other. A graph paper which all of us would have used in our school days, is a good example to understand this phenomenon. In the adjacent figure 5 we have two sets of parallel lines which are at equal intervals and at the same time are perpendicular to each other, *i.e.* *to* say that all lines in N-S direction are perpendicular to all the Lines in W-E direction. Similarly all lines in W-E direction are parallel to

each other but perpendicular to the lines in N-S direction. With the help of these equidistant parallel and perpendicular lines, we can correctly find the coordinates of any given point viz. A, B, C or D with reference to any given point of reference (say 'O'). For example:

For 'A' we can say   7 units in E direction and 7 units in N direction.

For 'B' we can say   6 units in W direction and 5 units in N direction.

For 'C' we can say   8 units in W direction and 8 units in S direction.

and similarly

For 'D' we can say   4 units in E direction and 5 units in S direction.
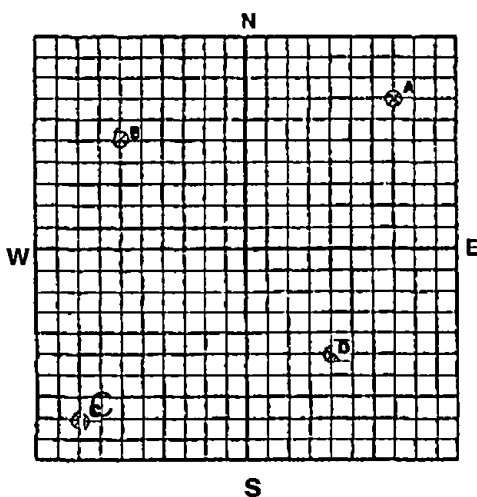
Figure 5

Alternatively, if the coordinates of any point are known, we can locate the point exactly on the plane by counting the number of units indicated by the coordinates, in the

appropriate direction. The same concept is applied to the earth's surface also with slight modifications as the surface of the earth is not a perfect plane but is having curvature, the earth's globe being a sphere for all practical purposes.

1.8.1 The surface of the earth's sphere is imagined to be cut by several planes each one of them passing through the centre of the earth and perpendicular to the plane of Earth's equator. These planes will describe *imaginary circles* on the surface of the earth so that each one of these imaginary circles will be passing through the North as well as the South pole of the earth and will have the same centre as that of the earth. The distance measured along the surface of the earth between any two such consecutive circles will be zero at both the poles (as all the circles will be passing through the poles) and will be maximum at the equator. These circles are known as the 'Meridians of Longitude'. These have been explained in the figure 6.
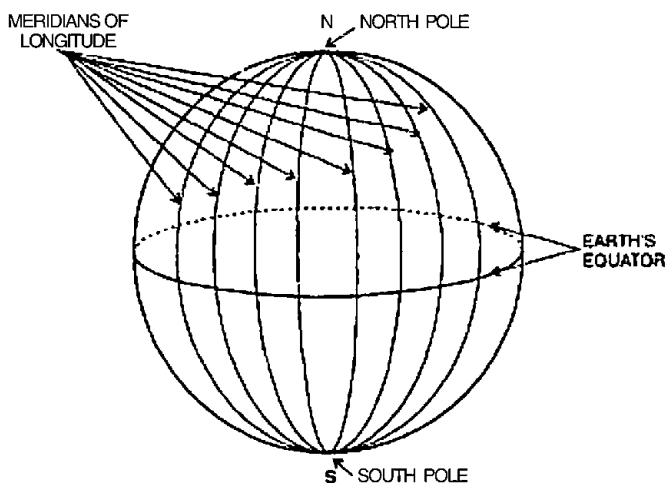
Figure 6

1.8.2 Again let us imagine the surface of the earth to be cut by imaginary planes which are all parallel to the plane of earth's equator. These planes will also describe circles on the surface of the earth and the centres of all such circles will be falling on the axis of the earth and each one of these circles will be parallel to each other as well as parallel to the earth's equator. These circles are known as parallels of Latitude. These have been explained in the figure 7.

It may be seen from the figure that all these circles (parallel of latitudes) have their centres on the axis of the earth just like equator also has its centre on the axis of the earth. These are shown as O, O 1 , O2 and so on upto O6 in the figure.

1.8.3 Students will recall that the 'meridians of longitudes' are nothing but concentric circles on the surface of the earth whose planes are all perpendicular to the plane of equator. Similarly, the 'parallels of latitudes' are again circles on the earth's surface but with their planes parallel to the plane of earth's equator. It is therefore self evident that at any given point on the surface of earth, the meridian of longitude and the parallel of latitude will be mutually perpendicular to each other and will therefore intersect each other at right angles or 90°.

1.8.4 Students are advised to re-read Para 1.8.1 to 1.8.3 above so that the application of the concept of 2 sets of equidistant parallel lines, each set being mutually perpendicular to the other set (Para 1.8) could be properly understood by them to locate or identify any place or city on the surface of the earth.

PARALLELS OF
LATITUDES

N

O3

O2

O1

O

EARTH'S
EQUATOR

O4

O5

O6

S

PARALLELS OF
LATITUDES
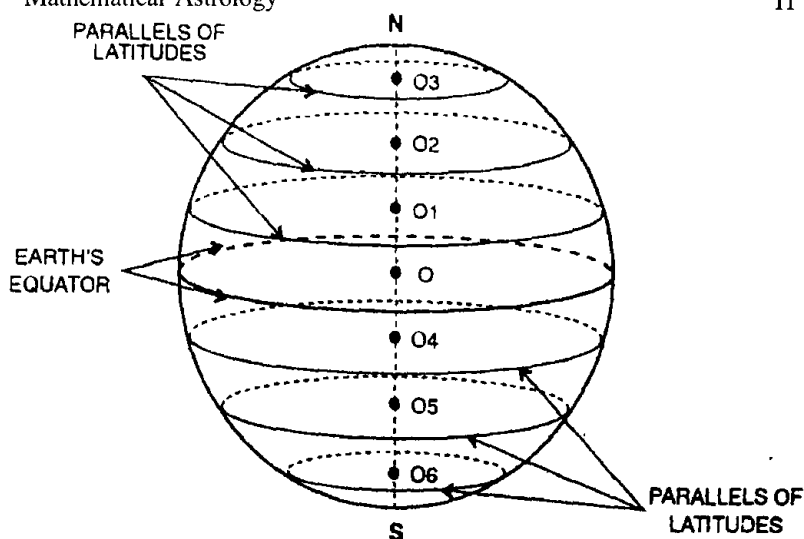
Figure 7

1.8.5 We have already seen that the earth's equator is a circle. As any circle comprises of 360° of arc so the earth's equator will also have 360°. For easy comprehension, we may imagine that there are 180 numbers of concentric circles drawn on the surface of earth in such a way that their planes are perpendicular to the plane of earth's equator. These 180 circles will describe 360 lines on the surface of earth (each circle will give two lines *i.e.* one in the front and the other at the back) which as we already know (Para 1.8.1) are known as meridians of longitudes. Each of these 360 meridians of longitude will pass from both the poles of the earth and at equator will be 1° apart. The distance between any two consecutive lines measured along the surface of earth will be maximum at earth's equator which will go on decreasing as we proceed along these lines either towards North Pole or towards the South Pole where it will become 'Zero'.

1.8.6 We may also consider for easy comprehension that the circles which are known as the Parallels of Latitude are also 180 in numbers *i.e.* 90 circles in the Northern Hemisphere and the remaining 90 circles in the Southern Hemisphere so that the angular distance (angle subtended at the centre of earth) between any two consecutive circle is 1° again as in the case of Meridians of the longitudes. We will therefore, have a set of parallel lines at 1° angular distance apart running from E to W or W to E around the earth's globe all of which will be perpendicular to the Meridians of longitude (para 1.8.3).

1.8.7 We can now super-impose the figures 6 and 7 and see that the new figure formed by merging or super-imposing the two figures will have a graph like appearance drawn on the surface of the earth which by and large will be somewhat similar to figure 5. The only exception will be that the lines in N-S direction or the Meridians of longitudes will not be exactly parallel to each other in the true sense. However as the students may be aware that earth's globe has a circumference of about 40,232 kms or 25,000 miles (approx.), the space of earth's surface covered beween two consecutive lines of 1° angular distance in N-S as well as E-W directions will be roughly of the order of 110 kms x 110 kms or 69 miles × 69 miles. Hence we may consider them to be parallel for the place or city under consideration.
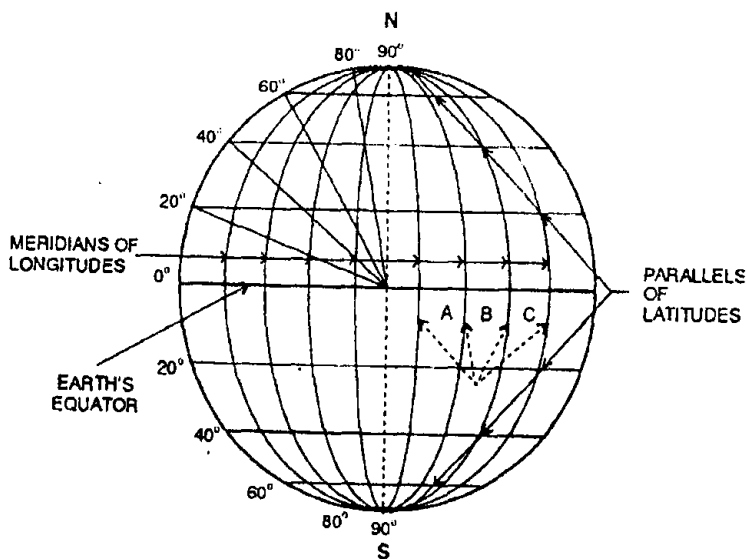
Figure 8

1.8.8 From the figure 8 above though it is clear that the Meridians of longitudes are never exactly parallel in the strict sense, but as explained in para 1.8.7 for the limited spaces marked as 'A', 'B', and 'C on the earth's surface these meridians (shown by dotted arrows in the figure) are considered as parallel. Therefore the conditions of figure 5 in para 1.8 above are considered to have been fulfilled.

1.8.9 Having drawn 2 sets of parallel lines at equal distance which are mutually perpendicular also, we are now set to locate any place on the surface of earth. We now only need to know its coordinates from a given reference point. In the context of earth's globe these coordinates are known as 'geographical longitudes' which are measured along the earth's equator either towards 'East' or 'West' from the reference point/line. The other coordinate being the geographical latitudes which are measured in perpendicular direction from earth's equator either towards 'North' or 'South' from the reference point or line. For the **purpose of**

longitudes, the reference line or the reference meridian has been chosen as the meridian passing through Greenwich near London. This meridian *i.e.* **the meridian passing through Greenwich is considered as 0° longitude and the longitudes of all other places on earth is measured with reference to this meridian only either towards East or towards West.** Hence all places, cities etc. on the surface of earth are located within either 0° to 180°E longitude or 0° to 180°W longitude. Similarly for **the purposes of latitudes the reference line or parallel of latitude is the equator itself. The latitudes of all places, cities etc. situated on the surface of the earth are measured from the equator whose latitude is 0°, either towards North or South depending on whether the place is in Northern or Southern Hemisphere.** Hence the latitudes vary from 0° to 90°N for places in Northern Hemisphere and from 0° to 90°S for places situated in Southern Hemisphere. Thus the point of intersection of 0° longitude *i.e.* the Meridian of Greenwich with the Earth's Equator is considered as the reference point 'O' shown in fig. 5.

1.8.10 Students would have seen that the explanation for Geographical longitudes and latitudes have been dealt with in much greater detail and is quite exhaustive in its content. If the phenomenon is clear with reference to the earth's globe, students will find it easy to understand when the same is applied to the space and the planets, which is our primary concern while talking about the Astrology.

EXERCISE - 1

Question 1 : Write short notes on :

(a) Terrestrial Equator *(b)* Meridians of longitudes

(c) Northern and Southern *(d)* Parallels of latitudes
    Hemisphere

Question 2 : Describe briefly our solar system indicating the inner and outer planets.

Question 3 : Find out with the help of an Atlas, the Geographical longitudes and latitudes of the places given below :

(a) Allahabad	*(b)* Anantnag	*(c)* Kolkata
(d) Bangkok	*(e)* Vatican city	*(f)* Sitka
(g) Yokohama	*(h)* Iceland	*(k)* Hanoi
(l) Kanazawa	*(m)* Mokameh	*(n)* Manila

ASTROLOGICAL TERMINOLOGY II

2.1 In the previous chapter we have seen how to locate or define a place on the earth's surface. We will now apply similar principles to the space and see how to locate or define the position of various planets situated in the space. For this purpose, we will have to imagine that the entire space around our planet earth is a *huge sphere* with infinite diameter which extends far beyond the farthest of the planets with which we are concerned in Astrology. So living on this planet earth, the other planets in the space including the Sun and the Moon would appear to us to be situated on the *imaginary surface* of this *imaginary sphere*.

2.2 Celestial Sphere or the Cosmic Sphere

The *imaginary sphere* in the space surrounding our entire Solar system, mentioned in Para 2.1 above, is known as the celestial sphere or the cosmic sphere.

2.3 Celestial Poles

If the Earth's axis is extended infinitely towards North and South, it will meet the imaginary surface of the cosmic sphere or the celestial sphere at some point. These points on the surface of cosmic sphere are known as the *Celestial Poles* and the extended axis becomes the imaginary axis of the *celestial sphere*.

2.4 Celestial Equator

The **projection of** earth's **equator** or the *terrestrial equator* on the imaginary surface of the celestial sphere is known as the Celestial Equator.

2.4.1 As the earth's equator divides the earth's globe into two halves, similarly the celestial equator divides celestial or cosmic sphere into *two equal halves or hemispheres*. These are known as Northern celestial hemisphere and the Southern celestial hemisphere.

2.5 Ecliptic *(Ravi Marg)*

The **apparent path in the space along which the Sun seems to move around the earth is known as** *Ecliptic*. This is also known as **Ravi Marg.** The Ecliptic or the Ravi Marg, like the orbits of other planets is not a circle but is **elliptical or oval in shape.** Ecliptic can **also be defined** as a **projection of Earth's orbit around the Sun** on to the **surface of cosmic sphere.** The plane of Ecliptic is inclined to the plane of celestial equator at an angle of about **23½°** due to the slant/inclination of the **earth's axis to the vertical.** Figure 9 given below will clarify the position.
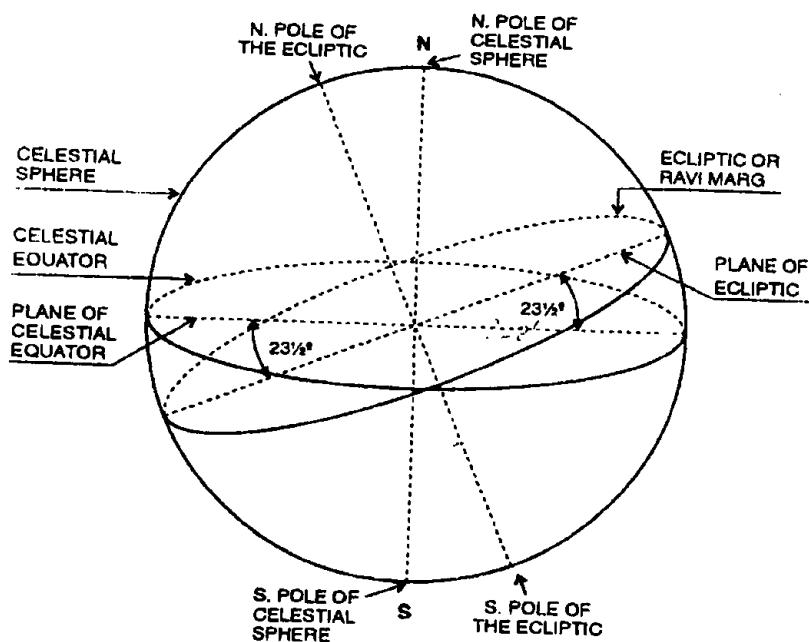
Figure 9

2.6 **Zodiac**

If one observes the movement of planets, it is seen that they also move in their own orbits along with the Sun's path, but their path deflects north-south also. However the planets never proceed more than 9° either north or south of the ecliptic. Hence if a parallel line on either side of the ecliptic is drawn at an angular distance of about 9° then the ecliptic will come in the middle and either side will be a broad band/path way in which all planets can be located. This imaginary belt/band stretching about 9° north and 9°· south of the ecliptic within which the planets and the Moon remain in course of their movement in the heavens, is known as Zodiac. In astrology we refer to this broad band of 18° instead of referring to the entire sky.

2.7 Celestial Longitude (*Sphuta*)

This is the arc of the ecliptic intercepted between the first point of Aries (Nirayana) and a perpendicular arc to the ecliptic drawn through the body (planet) and the poles of the ecliptic. In other words it can also be defined as the angular distance of any heavenly body (viz. planets etc.) measured in degrees along the ecliptic, in one direction from the origin (or the reference point - **first point of Aries of the zodiacal sign or the Vernal Equinox**). The first point of Aries is different in **Sayana** and **Nirayana** system. Students will recall that in the case of Geographical longitudes, the measurement was along the terrestrial equator and it was either towards east or west from the Greenwich or the reference point or 0° longitude so that the maximum longitude of any place on the surface of earth could be either 180°E or 180°W. However in the case of **Zodiac or to say the celestial sphere,** the **measurement of celestial longitude of any planet is in one direction** only from the origin or the reference point. As such

the celestial longitudes of various planets will be from 0° to 360° and in this case there is nothing like measuring towards east or west.

2.8 Celestial Latitude *(Vikshepa)*

It is the angular distance across the celestial sphere measured north or south from the ecliptic along the great circle passing through the poles of the ecliptic and the object.

2.9 Declination (*Kranti*)

It is the angular distance on the celestial sphere north or south of the celestial equafor. It is measured along the hour circle passing through the celestial object.

2.10 Right Ascension *(Dhruva)*

It is the angular distance on the celestial sphere measured eastward along the celestial equator from the vernal equinox to the hour circle passing through the celestial object.

2.11 It is considered necessary here to clarify the position to the students with regard to Para 2.7 to 2.10 above. While dealing with places on the surface of the earth we had only one system of coordinates viz. geographical longitudes in East-West direction and geographical latitudes in North-South direction. However in the case of heavenly bodies like planets etc., we have two different systems of coordinates. The first system of coordinates i.e. celestial longitudes and latitudes is normally followed by the Astrologers where as the other system i.e. Right Ascension and Declination is followed by the Astronomers. Inspite of there being two systems, the methodology adopted is by and large the same as is applicable to geographical longitudes and latitudes except that in the two systems mentioned above in context of celestial sphere the measurements along the Ecliptic as well as the celestial equator are **unidirectional** unlike towards east or west in the case of earth's equator.

2.12 Secondly in the first system which is followed by the Astrologers (celestial longitudes and celestial latitudes) the measurements are along and perpendicular to the Ecliptic whereas in the second system adopted by Astronomers i.e. Right Ascension and declination, the measurements are along and perpendicular to the celestial equator. The figure given below will make the point clear to the students.
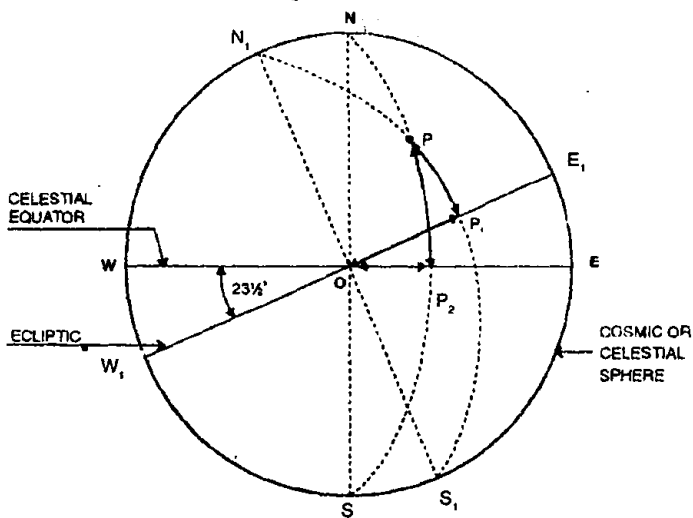
Figure 10

Students may plese see the figure 10 carefully. It depicts a cosmic sphere or a celestial sphere on the surface of which a heavenly body e.g. Planet 'P' is situated. The other constituents of the figure are :

(a) WOE	Celestial equator
(b) W_1OE	Ecliptic
(c) N and S	North and South poles of the celestial sphere or of the celestial equator.
(d) N. and S.	North and South Poles of the Ecliptic.

(e) NPP_2S	One side of the great circle (or the hour circle or circle of declination) passing through the planet P, and Poles N and S, perpendicular to the celestial equator and intersecting it at point P_2
(f) N_1PP_1S	One side of the great circle passing through the Planet P Poles N_1 and S_1 of the Ecliptic and perpendicular to it (Ecliptic) and intersecting the ecliptic at P_1.
(g) OP_1 1	is the angular distance measured along the ecliptic or we can call this as celestial longitude of planet P.
(h) PP_1 ·	is the angular distance measured perpendicular to the ecliptic. It is the celestial latitude of Planet P. As P is situated above the ecliptic in the Northern hemisphere the celestial latitude will be North.
(i) OP_2	it is the angular distance measured along the celestial equator. It is therefore right ascension of planet P.
(j) PP_2	It is the angular distance measured perpendicular to the celestial equator. It is therefore declination of Planet P. As the planet P is situated in the northern hemisphere, the declination of the planet will be North.

2.13 Oblique Ascension *(Rashimaan)*

Rashimaan means the rising periods of each of the twelve rashis or signs of the Zodiac. **It is the time required/ taken by each Rashi to rise completely through its 30 degrees on the eastern horizon of any place on earth. The Rashimaans vary from Akshamsha to Akshamsha. These are always given in Say ana system** *i.e.* to say that the time of oblique ascension is computed for the signs of moveable Zodiac. For the present students may remember the definition only. We will revert back to the subject when dealing with the traditional method of casting the horoscope.

EXERCISE - 2

Question 1 : Define :

    (a) Celestial sphere

    (b) Celestial poles

    (c) Celestial equator

    (d) Ecliptic

Question 2 : Explain with the help of diagrams :

    (a) Celestial longitude

    (b) Celestial latitude

    (c) Right Ascension

    (d) Declination

Also indicate their Hindu names.

Question 3 : Write a short note indicating in what way the measurement of coordinates of places on earth's globe differ from the measurement of coordinates for a heavenly body situated on the surface of cosmic sphere.

Question 4 : How many types of systems for measurements of coordinates of a heavenly body are you aware? Describe them with the help of diagrams.

ASTROLOGICAL TERMINOLOGY III

3.1 Equinoctial Points

In the celestial sphere the ecliptic intersects the equator *at two points because the Sun crosses the celestial equator* twice a year. These two points are known as Equinoctial points or Equinoxes, because when Sun is at either of these two points, the duration of day and night on earth will be equal.

3.1.1 When the Sun crosses the celestial equator on its way from southern hemisphere to northern hemisphere that equinoctial point is known as the *Spring or Vernal Equinox*. At that time the 'Sayana' longitude of the Sun is 0°. Similarly when the Sun, continuing its sojourn of the heavens again crosses the celestial Equator on its way from northern hemisphere to southern hemisphere, that Equinoctial point is known as *Autumnal Equinox*. At that moment the Sayana longitude of the Sun is 180°. Now-a-days the Sun is at Vernal Equinox on or around 21 st March and at Autumnal Equinox on 23rd September, each year.

3.2 Precession of the Equinoxes

It has been observed and can be proved mathematically that the Vernal Equinox or the first point of Aries from where the longitudes (Sayana or Tropical) of all the planets are measured along the ecliptic is not a fixed point. Each year when the Sun reaches the Vernal Equinox, the position of earth with reference to some fixed star shifts by 50 ⅓" of arc

westwards compared to position at equinoctial moment of the previous year. Therefore the Vernal Equinox (VE.) point is receding back along the ecliptic at the rate of about 50 ⅓" per year. This slight retrograde motion of the equinoxes is known as the *precession of the equinoxes*.

3.3 Moveable and fixed Zodiacs

Due to precession of equinoxes, the V.E. slips backwards from its original position (recognised as star Revati by the Hindus). The Zodiac which reckons the first degree of Aries (Mesha) from the VE. (which has a precession every year) is known as the Moveable Zodiac, while in the case of the Fixed Zodiac, the first degree of Aries (Mesha) is reckoned from a particular star in the Revati group of stars, which is fixed.

3.4 Ayanamsha

The angular distance measured along the Ecliptic, between the first point from where the fixed Zodiac commences and the V.E. point, at an Epoch is known as Ayanamsha. The exact period when the point of beginning of both the Zodiacs *i.e.* the Moveable Zodiac and the Fixed Zodiac coincided, is not known. Accordingly the Ayanamsha or the precessional distance varies from 19° to 24°. A number of dates are given as the year of coincidence. However, we follow the year as given by N.C. Lahiri in his Ephemeries *i. e.* 285 A.D. which is same as adopted by the astronomical observatories all over India.

3.5 The Sayana and Nirayana Systems

The system of Astronomy which recognises the Moveable Zodiac, belongs to Sayana school while that which considers the fixed zodiac is termed as the Nirayana system. The Sayana system is used by the western astrologers where as the Hindu Astrologers use the Nirayana system. There are

different names prevalent for the two types of Zodiacs which are as follows :

(a)   Moveable Zodiac is also known as Tropical Zodiac, Sayana Zodiac and the Zodiac of Signs.

(b)   Fixed Zodiac is also known as Sidereal Zodiac, Nirayana Zodiac and the Zodiac of Constellations.   ·

3.6 Determination of Approximate Ayanamsha

Though we must always use the Ayanamsha for any Epoch as given in the Ephemeries of N.C. Lahiri, we can roughly work out the value of Ayanamsha by following the method given below :

(a)   Subtract 285 from the year of the birth or the given year (A.D.)

(b)   Multiply the remainder by 50 $\frac{1}{3}$" and reduce the product into degrees, minutes and seconds.

Example : Ayanamsha for the year 2011 can be worked out as follows :

2011-285 = 1726

Multiply by 50 $\frac{1}{3}$" = 1726 × 50 $\frac{1}{3}$ = 86875.33"

Approximate Ayanamsha = 24°-7'-55.33"

3.7 Sign

The zodiac consists of 360 degrees. This is divided into 12 equal sectors each of 30° and each sector is called a 'Sign' or a 'Rashi'. The twelve signs/rashis of the zodiac their Names, Lords, etc. are as follows:

No.	Sign	Rashi	Extent	Lord of sign
1.	ARIES	MESHA	0° to 30°	MARS
2.	TAURUS	VRISHA	30° to 60°	VENUS
3.	GEMINI	MITHUNA	60° to 90°	MERCURY
4.	CANCER	KARKA	90° to 120°	MOON
5.	LEO	SIMHA	120° to 150°	SUN
6.	VIRGO	KANYA	150° to 180°	MERCURY
7.	LIBRA	TULA	180° to 210°	VENUS
8.	SCORPIO	VRISCHIKA	210° to 240°	MARS
9.	SAGITTARIUS	DHANU	240° to 270°	JUPITER
10.	CAPRICORN	MAKARA	270° to 300°	SATURN
11.	AQUARIUS	KUMBHA	300° to 330°	SATURN
12.	PISCES	MEENA	330° to 360°	JUPITER

3.8 Nakshatras or Stars/Constellations

The Hindus have yet another division of the Zodiac. In this system the entire zodiac is divided into 27 equal parts of 13°20' each. These divisions are called Nakshatras or Stars or Constellations or Asterisms. Their names, extension in the zodiac, their lords etc. are as follows :

S.No.	Name of Nakshatra/ Star	Extent (Longitude)	Extent Sign/Rashi	Lord of Nakshatra/ Constellations	No. of years in Vimshottari Dasha
1.	Ashwini	0° to 13°20'	Mesha 0° to Mesha 13°20'	KETU	7
2.	Bharani	13°20' to 26°40'	Mesha 13°20' to Mesha 26°40'	VENUS	20
3.	Krittika	26°40' to 40°	Mesha 26°40' to Vrisha 10°	SUN	6
4.	Rohini	40° to 53°20'	Vrisha 10° to Vrisha 23°20'	MOON	10
5.	Mrigashira	53°20' to 66°40'	Vrisha 23°20' to Mithuna 6°40'	MARS	7

S.No.	Name of Nakshatra/ Star	Extent (Longitude)	Extent Sign/Rashi	Lord of Nakshatra	No. of years in Vimshottari Dasha
6.	Ardra	66°40' to 80°	Mithuna 6°40' to Mithuna 20°	RAHU	18
7.	Punarvasu	80° to 93°20'	Mithuna 20° to Karka 3°20'	JUPITER	16
8.	Pushya	93°20' to 106°40'	Karka 3°20' to Karka 16°40'	SATURN	19
9.	Ashlesha	106°40' to 120°	Karka 16°40' to Karka 30° or Simha 0°	MERCURY	17
				TOTAL	120
10.	Magha	120° to 133°20'	Simha 0° to Simha 13°20'	KETU	7
11.	Poorva Phalguni	133°20' to 146°40'	Simha 13°20' to Simha 26°40'	VENUS	20
12.	Uttra Phalguni	146°40' to 160°	Simha 26°40' to Kanya 10°	SUN	6
13.	Hasta	160° to 173°20'	Kanya 10° to Kanya 23°20'	MOON	10
14.	Chitra	173°20' to 186°40'	Kanya 23°20' to Tula 6°40'	MARS	7
15.	Swati	186°40' to 200°	Tula 6°40' to Tula 20°	RAHU	18
16.	Vishakha	200° to 213°20'	Tula 20° to Vishchika 3°20'	JUPITER	16
17.	Anuradha	213°20' to 226°40'	Vrishchika 3°20' to Vrishchika 16°40'	SATURN	19
18.	Jyeshtha	226°40' to 240°	Vrishchika 16°40' to Vrishchika 30° or Dhanu 0°	MERCURY	17
				TOTAL	120
19.	Moola	240° to 253°20'	Dhanu 0° to Dhanu 13°20'	KETU	7
20.	Poorvashadha	253°20' to 266°40'	Dhanu 13°20' to Dhanu 26°40'	VENUS	20
21.	Uttrashadha	266°40' to 280°	Dhanu 26°40' to Makara 10°	SUN	6
22.	Shravana	280° to 293°20'	Makara 10° to Makara 23°20'	MOON	10

23.	Dhanishtha	293°20' to 306°40'	Makara 23°20' to Kumbha 6°40'	MARS	7
24.	Shatabhisha	306°40' to 320°	Kumbha 6°40' to Kumbha 20°	RAHU	18
25.	Poorva Bhadra	320° to 333°20'	Kumbha 20° to Meena 3°20'	JUPITER	16
26.	Uttra Bhadra	333°20' to 346°40'	Meena 3°20' to Meena 16°40'	SATURN	19
27.	Revati	346°40' to 360°	Meena 16°40' to Meena 30° (or Mesha 0°)	MERCURY	17
				TOTAL	120

3.9 Ascendant or Lagna

The ascendant or the lagna point is the point of intersection of the ecliptic at the given time with the horizon of the place. In astrology it is the first house of the horoscope. This point of intersection is very important as it is considered to be the commencing point of the horoscope. The earth rotates on its axis from West to East in about 24 hours. Due to this rotatory motion the whole sky (Zodiac) appears to come up from below the horizon gradually. The Ascendant or the Lagna is the 'Rising sign' in the eastern horizon. The duration of each lagna is not equal like the rashi or the sign division. As all the 12 rashis or signs must rise one after the other in a day (due to rotation of earth on its axis once a day) each rashi/ sign becomes the lagna one after the other consecutively, with the passage of time. The names of the lagnas or the Ascendants are the same as that of the rashi/sign rising at any given time.

3.10 The Tenth House or M.C.

The point of intersection of the ecliptic with the meridian of the place, at any time, is the 'tenth house' for that moment. It is also known as the Mid-heaven or *Medium Coeli* (M.C.) and also known as meridian. The longitude of this point is, as usual, measured along the ecliptic from the first point of Aries. The right ascension of the MC is the sidereal time of the moment which is often called R.A.M.C.

3.11 The Table of Ascendants

This is a small book containing several tables for use in casting a horoscope. One such book commonly used by the students of astrology is by N.C. Lahiri. This gives the sidereal time at Noon for the central station of India or for the standard Meridian for India (longitude 82° 30'E) for the year 1900 and for each day of the year. It also contains tables for correction to be applied for different years and different places so that we can find out the sidereal time for any day of any year for all the places on earth. Then this book gives the tables for the different Ascendants (the degree and sign of the ecliptic) rising for every 4 minutes interval of Sidereal Time for different latitudes on the earth (0° North to 60° North). In our lessons we will be making extensive use of this book. We shall therefore advise our students to purchase a copy of this book (Tables of Ascendants) for their use.

3.12 The Table of Houses

This also is a small book like Tables of Ascendants. This is available in Nirayana as well as Sayana systems. It gives the longitudes of the 10th, 11th, 12th, 1st (Ascendant), 2nd and 3rd cusps (Midpoint of a house according to Hindu system and beginning of a house according to the western system of astrology) for different latitudes and sidereal time. With the help of this book one can directly note down the longitudes of the aforesaid six houses and by adding 180° or 6 signs to those longitudes, the longitudes of the remaining six houses *i.e.* 4th, 5th, 6th, 7th, 8th and 9h can be found out. However since we follow the method of house divisions as given by sage Parashara, the tables of Ascendants mentioned in Para 3.11 will meet the requirements and there would be no need to buy the Table of Houses.

3.13 The Ephemeris

This is nothing but a modern Panchang. It is available in book form. It tabulates the positions of celestial objects

(Planets etc.) in an orderly sequence for one complete year (for the current years). Condensed Ephemeris are available for the past years. In these lessons we shall be following the Indian ephemeris of N.C.Lahiri, published by Astro Research Bureau, Calcutta. Students are therefore advised to have with them complete set of these ephemeris. These are available in book form for the following years:

1. 1900 to 1941	6. 1981 to 1985
2. 1941 to 1951	7. 1986 to 1990
3. 1951 to 1961	8. 1991 to 1995
4. 1961 to 1971	9. 1996 to 2000
5. 1971 to 1981	10. 2001 to 2005 AD

3.14 We have so far discussed about the Astrological Terminology commonly used in Mathematical Astrology. However in addition to the Terms discussed so far we will come across some more terms which will be discussed at the appropriate place, as we proceed further with our lessons.

Table IV: Correction for Hours and Minutes

The result obtained upto Table III *(i.e.,* step 4 above in example 3 of para 6.3 is the sidereal time for 12 h noon local mean time of the place. The time interval of given moment from the above noon, increased by the following correction, is then to be applied to the above sidereal time for the given moment. When the moment of birth is after 12 noon, the increased time interval is to be added to and when it is before 12 noon it is to be substracted from the sidereal time for the noon. If the total thus obtained exceeds 24 hrs, then 24 h should be substracted from it and where necessary 24 h may also be added to facilitate substraction.

Correction to Increase the Time Interval

Time	Corn		Time	Corr.		Time	Corr.	
h	m	s	h	m	s	m	m	s
1	+ 0	10	13	2	8	6	+ 0	01
2	0	20	14	2	18	12	0	02
3	0	30	15	2	28	18	0	03
4	0	39	16	2	38	24	0	04
5	0	49	17	2	48	30	0	05
6	0	59	18	2	57	36	0	06
7	1	09	19	3	07	42	0	07
8	1	19	20	3	17	48	0	08
9	1	29	21	3	27	54	0	09
10	1	39	22	3	37	60	0	10
11	1	48	23	3	47			
12	1	58	24	3	57			

Legend: h - hour, m - minutes, s - seconds.

EXERCISE - 3

Question 1 : What are the Equinoctial Points ? How many are these points ? Explain with the help of a diagram.

Question 2 : Write short notes on :

(a) Precession of Equinoxes   (b) Moveable and Fixed zodiacs (c) Ayanamsha

Question 3 : What do you understand by Sayana and Nirayana system ?

Question 4 : What is the yearly rate of precession of V.E. ? Work out the approximate Ayanamsha for the year 2003 considering the year of coincidence as 285 AD as well as 397 AD.

Note : Students are advised to have with them the Book titled "A Manual of Hindu Astrology" by Dr. B.V. Raman for a fuller treatment and understanding of Mathematical Astrology.

CHAPTER 4

TIME MEASURES

4.1 The time is measured in hours, minutes, seconds and fractions of second in the western system which is now commonly used in India and other countries of the world. However the division of time is peculiar to 'Hindus'. It begins with a *Tatpara* and ends in a *kalpa*. A **kalpa** is equal to 4,320,000,000 sidereal years. The Hindu day (an apparent solar day) begins from Sunrise and ends with the next sunrise when the next day begins.

4.2 The Hindu division of time is as under :

60 Tatpara	=	1 Para
60 Para	=	1 Vilipta
60 Vilipta	=	1 Lipta (or Vilipta)
60 Lipta	=	1 Vighati (or **Pala**)
60 Vighati	=	1 Ghati = 24 minutes
60 Ghatis	=	1 Day = 24 hours

4.3 Again a Hindu measure of time is in terms of 'Yuga'. The details are as under :

1st Yuga	Sat Yuga	=	17,28,000 sidereal years
2nd Yuga	Treta Yuga	=	12,96,000 sidereal years
3rd Yuga	Dwapar Yuga	=	8,64,000 sidereal years
4th Yuga	Kali Yuga	=	4,32,000 sidereal years

Total of 4 Yugas or 1 Mahayuga = 43,20,000 sidereal years

1 Kalpa   = 1,000 Mahayuga

                           = 43,20,000 × 1000

                           = 43,20,000,000 Sidereal years.

1 day of Brahma   = 2 Kalpas

                           (i.e. 1 Kalpa day and 1 kalpa night)

1 year of Brahma   = 360 × 2 Kalpas

or 1 Brahma Varsha = 720 Kalpas

Aayu of Brahma   = 1,000 Brahma Varsha.

4.4 Sidereal Day

This is the time taken by the earth to rotate once on its axis with reference to any fixed star. This is known as *Nakshatra Dina* among the Hindus and is equal to 23 hrs. 56 min. (approx.) of 'Mean solar day'.

4.5 Sidereal Year

The Sidereal year is the mean period of revolution of the earth in its orbit with respect to the background stars (from fixed star to fixed star).

4.6 Apparent Solar Day

This is also known as 'Savana Day'. This is longer than the 'Sidereal Day' by about 4 (four) minutes. According to *Surya-Sidhanta* Savana day is reckoned from sunrise to next sunrise.

4.7 Mean Solar Day

This is reckoned by considering the average length of all the days in a year.

4.8 Months

There are two types of months in vogue in Hindus which are as follows :

(a) **Lunar** Month or Chandra Maan : It has 30 lunar days or Tithis and is measured from New Moon to next new Moon. At some other places it is measured from Full Moon to next Full Moon.

(b) **Solar Month or Saur Maan** : It is the time the Sun takes to move in one sign and is measured from one Sankranti to the next Sankranti.

4.9 Years

In Hindus there are three types of different years in vogue which are as follows.

(a)   *The Savana year* : It has 360 mean solar days

(b)   *The Lunar year* : It has 354 mean solar days

(c)   *The Nakshatra year :* It has 324 mean solar days

4.10 Tropical Year

The Tropical Year or the year of seasons, is the time of the passage of the Sun from one Vernal Equinox to the next Vernal Equinox. The V E. point slips to the west at the rate of $50\frac{1}{3}$" per year.

4.11 Anomalistic Year

The anomilistic year is the mean interval beween successive passages of the earth through perihelion. Perihelion is the point on a planetary orbit (in this case earth) when it is at the least distance from the Sun.

4.12 The lengths of different years mentioned in para 4.5, 4.10 and 4.11 above, according to modern calculation

(as given by Dr. B.V Raman in his book *A Manual of Hindu Astrology)* are as follows :

Year	Length			
	D	H	M	S
The Tropical year	365	5	48	45.6
The Sidereal year	365	6	9	9.7
The Anomalistic year	365	6	13	48

EXERCISE - 4

Question 1 : Define the following :

(a) Tropical Year   (d) Sidereal Day

(b) Sidereal Year   (e) Appaent Solar Day

(c) Anomalistic Year   (f) Mean Solar Day

Question 2 : Convert the following in Hour, Min and Sec.

(i) 55 Ghati 23 pal   (ii) 2 Ghati 56 Pal   (iii) 32 ghatis

Question 3 : Convert the following into Ghati, Pal and Vipal

(i) 6 Hrs 45 Min 30 Secs (ii) 13 Hrs 49 Min 36 Sec

(iii) 21 Hrs 3 Min 45 Secs (iv) 17 Hrs 21 Min 12 Sec

,

CHAPTER 5
TIME DIFFERENCES

5.1 Students are aware that the Sun is the creator of time, day and night and the seasons. A Hindu day commences from the sunrise and remains in force till the next sunrise, when the next day commences. When the Sun is exactly **overhead** it is called **Mid day or Local noon.** At the moment of sunrise for any place, the local time for that place is Zero hour (or Ghati) as per traditional Hindu system of reckoning. the time.However as the earth is not a flat body but spherical and also rotating on its axis, the Sun rises at different times at different places. As the **rotation of the earth on its own** axis **is from west to east, it is evident that the eastern part of the earth will see the Sun first, and due to the rotation of the earth,** further western parts of the earth moves towards east gradually and see the Sun. This process goes on and on. In other words, as we live on this planet earth we do not see or feel the rotation of the earth from west to east, but we see that the Sun rises in the east and gradually comes over head and then sets in the west.

5.2 Local Time

We have seen above that the eastern parts of the earth will see the Sun first and subsequently as more and more western parts move to east due to rotation of earth, those parts Will also gradually see the Sun. In other words it means that the Sun will rise later at a particular place as compared to a

place towards east of the earlier place. It therefore implies that Zero hour of the day will commence earlier at a place which is in the east of another place where the Zero hour of the day will commence later. Similarly the Noon time or the Mid day will occur earlier in the eastern part of the earth as compared to any place towards west of the earlier place. We know that earth complete one full rotation (360°) on its axis in about 24 hours or $24 \times 60 = 1440$ minutes. It simply means that Earth will take about $1440/360 =$ **4 min. to rotate by** 1° on its axis. We can therefore conclude that Zero hour at a place 'B' which is 1° towards west of place 'A', will commence later by 4 minutes as compared to place 'A'. So the local time differs from place to place. Strictly speaking as neither the earth is a perfect sphere nor its orbit around the Sun is a perfect circle and as also the axis of earth is inclined by about 23⁄4° to the perpendicular to the plane of earth's orbit, even the duration of time or the rate of elapsing of local time is not uniform for the same place. In order to have a uniform rate of time lapse and also to avoid complex mathematical computations, a more convenient term has been adopted for Astrological purposes which is known as 'Local Mean Time' for a particular place. The local time or more accurately the local mean time (LMT) which is created by the gradual rising of the Sun and the roundness and rotation of the earth is the real or natural time of a place. This differs from place to place and is dependent on the longitude and latitude of the place. In Astrology we reduce every given time into Local Mean Time first and then proceed further.

5.3 Standard time

As explained above, the local time differs from place to place. This becomes quite inconvenient when we have to refer to time at a broader perspective say National or International level. With the advent of the postal department and later the

railways, Airways etc., this difficulty increased in india as well as elsewhere. A new version of time was therefore decided upon and was called the 'Standard Time' to have the uniformity of time which was the L.M.T. of a centrally located longitude in that country. In case of India, it was in the year 1906 AD when it was decided that the terrestrial longitude 82°30'E will be taken as the Standard Meridian of India for this purpose and the Local Mean Time (L.M.T.) at this Meridian (82°30' East longitude) will be the 'Indian Standard Time'. By this arrangement, the watches began to show a uniform time through out the country.

5.4 In the case of bigger countries like U.S.A., the entire country was divided into 4 or 5 convenient zones and for each zone a standard meridian representing that zone was chosen as standard meridian for that zone. The L.M.T. at that particular meridian was considered to be the Zonal Standard Time (ZST) applicable for that zone only. Students are advised to see the last page of their Tables of Ascendants by N.C. Lahiri, wherein the 5 different time zones have been indicated for the U.S.A.

5.5 Greenwitch Mean Time

As in the case of a country, the necessity to have a uniform time, generated the concept of 'Standard Time' for a country, in the international affairs, it was considered necessary to have a standard time which could be referred to by all the countries of the world whenever needed. Students will recall that the meridian passing through the Greenwich (near London) has been chosen as the 0° longitude or the reference point for reckoning the terrestrial longitudes of all places on earth. Therefore the **local time at the meridian of Greenwich at any epoch (moment) is known as Greenwich Meantime (G.M.T.).**

5.6 Conversion of Time

Students will recall that while discussing the local time vide Para 5.2 above, we worked out that a difference of 1° in the geographical longitudes of two adjacent places on earth will make a difference of 4 minutes in their local time. Therefore by using this principle, we can convert any given time in one form to the other two forms viz if the time given is in IST, we can convert it to the LMT or GMT as desired or required, if the geographical (terrestrial) longitude of the place is known. Similarly, we can always convert any meridian of longitude from degrees to time and find out the time zone for any country if the longitude of the standard meridian for that country is known.

5.7 Time Zone

Time Zone is nothing but the standard meridian for any country (or any zone within a big country) expressed in terms of hours and minutes diference with reference to the GM.T. In other words the difference between standard Time of any country or zonal standard time of any zone and the GMT is known as the time zone for that country or zone. The time zone is (+) or (-) according to the longitude of standard meridian for the country or zone being towards the east or west of Greenwich.

Example 1 : The geographical longitude of the standard meridian for India for IST = 82°30' East

Multiplying this by 4 we get (as 1 ° is equal to 4 minutes, 1' will be equal to 4 sec.)

$$= \quad 82° \times 4 \text{ min} : 30' \times 4 \text{ sec}$$
$$= \quad 328 \text{ min} : 120 \text{ secs} = 330 \text{ min}$$
$$= \quad 5 \text{ hrs } 30 \text{ minutes}$$

Since India is towards east of Greenwich the time zone for India will be = (+) 5h30m which means that IST will always be ahead of GMT by 5^h30^m. So if the GMT is 6:00 AM, the Equivalent IST will be $6^h:00^m + 5^h:30^m = 11^h.30^m$ AM.

5.8 Similarly, if the time zone of a country is known, we can work out the longitude of the Standard Meridian for that country.

Example 2 : Find out the longitude of the Standard Meridian for Mexico if it falls in Time Zone (-) 6 hrs.

(a)   Since the Time Zone is (-) hence the longitude of the place will be towards "west" of Greenwich

(b)   Time Zone = 6 hours

or 6 × 60 = 360 mins

As 4 mins = 1 °

So 360 min = $\dfrac{360}{4}$ = 90°

Therefore, longitude of Standard Meridian for Mexico = 90°W

Example 3 : Find out the longitude of Standard Meridian for New York if it falls under Time Zone (-)5 hrs.

Solution : **Time** Zone = 5 hrs

or 5 × 60 = 300 mins.

Dividing it by 4 we get = $\dfrac{300}{4}$ =75°

Since the Time Zone given is (-) it has to be towards west of Greenwich. Therefore longitude for Standard Meridian for New York = 75°W

Example 4 : Find out the longitude of the Standard Meridian for Beijing if it falls under Time Zone (+) 8 hours.

Solution : Time Zone = 8 hrs

or 8 × 60 = 480 mins.

Dividing it by 4 we get = $\dfrac{480}{4}$ = 120°

Since the Time Zone is (+) it is towards east of Greenwich, therefore longitude of the Standard Meridian where Beijing falls = 120°E

5.8 **L.M.T.** Correction

This is duration of time or a measure of time to be applied to find L.M.T. of a place from the standard time of that country or zone shown by the watch. This is obtained by multiplying the difference of longitude of the place from the Standard Meridian by 4 minutes per degree. The L.M.T. correction is either (+) or (-) depending on whether the place is towards East (E) or West (W) from the standard meridian for that country. In order to find out the L.M.T. correction, one should proceed as follows :

Step 1 :   Find out the longitude of Standard Meridian for the country or zone as the case may be. If it is not readily available, note down the time zone from the list of cities given by N.C. Lahiri in his book *Tables of Ascendants* or Indian Ephemeris and work out the longitude as explained in Examples 2 to 4 above.

Step 2 :   Note down the longitude of the place for which the L.M.T. or L.M.T. correction is desired.

Step 3 :   Also note whether the longitude of the place is towards east or west of the Standard Meridian.

Step 4 :   Find out the difference in degrees (or the angular difference between the two long).

Step 5 :   Multiply the difference (in step 4 above) by 4. The product will give you the L.M.T. correction. (Apply correction at the rate of 4 'Min' per degree to find out LMT).

Step 6 :   Prefix the sign (+) or (-) to the L.M.T. correction depending whether the place is towards 'E' or 'W of the Standard meridian.

Step 7 :   Apply the L.M.T. correction to the ST (Standard Time) given to get the L.M.T.

5.9 If the L.M.T. is given and it is desired to find the Standard Time, then reverse the sign (+ or -) prefixed to the L.M.T. correction worked out in step 5 and 6 above and then apply the correction. The Examples given below will clarify the above steps.

Example 5 : If the time of birth of a native born at Delhi is 10:30 AM (IST) find out the Local Mean Time of birth of native.

Solution:

Step 1: Long. of standard meridian of India

for IST   = 82°30'E

Step 2: Long. of place of Birth

i.e. Delhi   =77°13E

Step 3: By persual of the two long. it is clear that Delhi is towards west of the standard meridian of India.

Step 4: Diff. in the two long. = 82°30'–77°13' = 5°17

Step 5: Multiplying by 4 we get   = (5x4)+(17x4)

                                      = 20^{min} 68^{sec}

        or   L.M.T. corr   = 21^{min} 8^{sec}

Step 6: Keeping in view step 3. the sign to be prefixed will be
         (-)•

         Hence L.M.T. corr   =   (−) 21^m 8sec

Step 7: Applying the L.M.T. correction we get the L.M.T.
         of birth

         10 hrs 30 mts (-) 21 mts 8 secs. =   10^h:8^m:52^s

Example 6 : Find out the L.M.T. correction in Examples
2, 3, and 4 given earlier.

(a) Example 2:
Long. of standard meridian   = 90°W
Long. of Mexico (from the tables) = 99°01'W
Hence Mexico is further **west** of standard meridian
Difference in the two long.   = 99°01'-90° = 9°1'
Multiplying by 4 we get   = 36^m 4^{sec}
Hence L.M.T. corr   = (-) 36^m 4^{sec}

(b) Example 3 :
Long. of standard Meridian   = 75° W
Long. of New York   = 74° W
(From the tables)
Hence New York is **east** of standard meridian
Difference in the Two long.   = 75° − 74° = 1°
Multiplying by 4 we get   ∙ = 4^{min} 0^{sec}
Hence L.M.T. correction   = (+) 4^{min} 0^{sec}

(c) Example 4 :
Long. of standard Meridian   = 120° E
Long. of Beijing (from the tables) = 116°28'E
Hence Beijing is towards **west** of standard meridian
Difference in two long.   = 120° − 116°28' = 3°32'
Multiplying by 4 we get   = 12^m 128^{sec}
or   = 14^m 8^{sec}
Hence L.M.T. corr.   = (-) 14^m 8^{sec}

5.10 Students may please note that the L.M.T. corrections worked out by us in Example 5 and 6 above are available and can be directly noted from the list of principal cities and foreign cities given by N.C. Lahiri in his book *Tables of Ascendants* and Lahiri's *Indian Ephemeris for 2011* (Pages 146 to 160). However we have given the above examples so that the students can practice and understand the principle thoroughly. At times the students may come across a city or place which does not find a place in the aforesaid lists given by N.C. Lahiri. In such cases though the geographical longitude and latitude can be known from any standard Atlas, unless the students are well conversant with the underlying principles, they may find it difficult to work out the L.M.T. corrections.

5.11 *By making use of the principle as* outlined *in para* 5.8 and 5.9 above and its practical application explained through the examples 5 and 6 it should now be possible for us to convert any time (LMT or ZST or IST or GMT) from one form to the other for any place in any part of the world. The example given below will make it more clear.

Example 7 : If a child is born at 10:30 AM (LMT) at Los Angels, what will be the:

(a)   ZST   of   Birth   (b) **GMT** of Birth

(c)   **IST**   of   Birth   (d) LMT of Birth at Delhi.

Solution **(a) ZST** of Birth:

Step 1: Time Zone of Los Angels = (-) 8 hrs

or $= 8 \times 60 = 480^{min}$

Divide by 4 we get $= 120°$

Since it is(-), so the Standard Meridian has to be towards 'W of Greenwich. Therefore **Long.** of Standard Meridian = 120°W

Step 2:   Long. of Los Angels (from the tables) = 118°17'W

Step 3:   Hence Los Angels is towards east of its Standard Meridian. So the LMT correction will be (+).

Step 4:   Difference in the two long.   = 120° - 118°17'
                                           = 1°43'

Step 5:   Multiply by 4, we get   = 4^{min} 172^{sec}
          or   = 6^{min} 52^{sec}

Step 6:   Hence L.M.T. correction   = (+) 6^{min} 52^{sec}

Now since LMT of Birth is given and we have to find the ZST of Birth, so in accordance with Para 5.9 above, we have to *reverse the sign* and then apply the correction. Hence,

ZST   of   Birth   =   10:30 (AM) (–) 6^{min} 52^{sec}
or   Time   of   Birth   =   10^{hrs} : 23^m : 08^s (AM) ZST

(b) GMT of Birth : As the time zone for Los Angels is (-) 8 Hrs, hence the GMT will be more (advance) by 8 Hours of ZST.

∴   GMT   of   Birth   =   10^{hrs}:23^m:08^{sec} (+) 8^{hrs}
or   =   18^{hrs}:23^m:08^{sec}
or   =   6^{hrs}:23^m:08^{sec} (PM)

(c) IST of Birth : As the Time Zone of India is (+) 5 Hours 30 Min. the IST will be ahead (more) of GMT by 5 Hrs. 30 Min.

∴   IST   of   Birth   =   GMT (+) 5^h 30^m
                         =   6^h:23^m:08^{sec} (+) 5^h:30^m
                         =   11^h:53^m:08^{sec} (PM)

(d) LMT at Delhi at the Time of Birth: We have already worked out the LMT correction for Delhi in Example 5 above which is (-) 21^m 08^{sec} ∴ LMT at Delhi at the time of Birth of child in Los Angels can be known by applying the LMT correction i.e.

$11^h:53^m:08^{sec}(-)\,21^m08^{sec}$

or $= 11^h\,32^m$PM or 11:32 PM (LMT)

Alternative Method for *(d)* above

We can work out the Difference in longs. of Los Angels and Delhi, convert it into Hour & Min and apply

$$\text{Long. of Los Angels} = 118°17'\,W$$
$$\text{Long. of Delhi} = 77°13'\,E$$

Therefore Distance between Los Angels and Delhi
$$= 195°30'$$

Multiply the above angular distance by 4 to get the time difference between Los Angels and Delhi.

$$\text{Therefore } (195°30') \times 4 = (195\times4)^m + (30\times4)^{sec}$$
$$= 780^m + 120^{sec} = 782^{min}$$
$$= 13^h2^m$$

As Delhi is towards East of Los Angels the time at Delhi will be more than Los Angels. Hence the time diff. will be (+) or additive.

$$\text{So LMT at Delhi} = \text{LMT at Los Angels} + 13^h2^m$$
$$= 10{:}30\,AM + 13^h2^m$$
$$= 23^h32^m$$
or $$= 11^h32^m\,PM$$
or $$= 11{:}32\,(PM)$$

EXERCISE - 5

Question 1 : If IST of Birth is 02:45 PM, what will be LMT at:

(a) Delhi	*(b)* Bombay	*(c)* Madras
(d) Calcutta	*(e)* Patna	*(l)* Allahabad
(g) Varanasi	*(h)* Bangalore	*(i)* Lahore

(j) Dhaka   *(k)* San Francisco   *(l)* New York

(m) Hanoi   *(n)* Munich   *(o)* Rangoon

Question 2 : Find out the Long. of Standard Meridian if the Time Zone is :

(a) (+) 2 hrs 45 min   *(b)* (-) 4 hrs 20 min.

(c) (-) 6 hrs 40 min.   *(d)* (+) 8 hrs 15 min.

Question 3 : If the GMT is 11:50 AM, what will be the time (LMT) at :

(a) Hanoi   *(b)* Tokyo   *(c)* Munich

(d) Singapore   *(e)* Washington DC   *(f)* Delhi

(g) Ottawa   *(h)* Paris   (0 Hong Kong

Question 4 : If the IST is 10:30 P.M. what will be the time (LMT) at :

(a) 82°30' East long.   *(b)* 82°30' West long.

(c) 0° long   *(d)* 2° West long.

(e) 77'13' East long.   *(f)* 118°40' East long

(g) 118°40' West long.   *(h)* 21° 13' East long.

Question 5 : Convert the following Local Mean Times to IST (Indian Standard Time):

(a) 3:45 P.M. at Calcutta   *(b)* 2:30 AM at Bombay

(c) 6:08 PM at Madras   *(d)* 9:03 AM at New York

(e) 7:30 PM at Washington DC

(f) 6:30 AM at Tokyo

(g) 11:21 AM at San Francisco

(h) 6:30 PM at GMT

SIDEREAL TIME

6.1 We have seen in the previous lesson the three different systems of measuring time viz Local Time or Local Mean Time (LMT), Standard Time for any country or Zone (*i.e.* IST, ZST etc.,) and the Greenwich Mean Time (GMT). There is yet another system/measure of time which is called 'Sidereal Time'. **The Sidereal Time system is derived from the earth's rotation with respect to the stars.** The students will recall that while discussing the Time Measures vide Lesson 4, we defined the **Sidereal day as the time taken by the earth to rotate once on its axis with reference to any fixed star.** The duration of this sidereal day is equal to 23 hrs 56 min (approximately) or 23 hrs 56 min 4.091 sec. more precisely, of mean solar day. In **astronomical terminology,** the sidereal time at any instant is defined to be the **west hour angle of the Vernal Equinoctial (VE) point or** the **first point of Sayana Aries (Mesha) from the upper meridian** of the place. However for the purpose of its application to mathematical astrology, it will suffice to define the Sidereal Time as the Local Time reckoned according to the apparent rotation of the celestial sphere. In other words, whenever the time is reckoned with reference to the sidereal day, it is called Sidereal Time. The Sidereal Time is 'Zero' hour when the first ponit of Aries or Mesha (in sayana system) *i.e.* vernal or the spring equinox crosses

the observer's meridian (which is the great circle on the celestial sphere, passing through the zenith and both the celestial poles).

6.2 Necessity to have the Sidereal Time System

Students may be aware that for any astrological delineation, the horoscope prepared for a particular epoch (moment) is not only a necessity but the only **astrological equipment** available to the astrologer based on which **he analyses the shape of things to come in the future. The horoscope which is a map of heavens** at the given moment, **contains 12 houses** and the **commencement of the horoscope** is the **'first house'** or the **'lagna'** or the **'ascendant'.** It is therefore **most important to calculate the correct lagna** or the **ascendant** without which no horoscope can be prepared. Students may now recall that while discussing about the ascendant or lagna vide Para 3.9 of Lesson 3 it was stated that **due to the rotatory motion of the earth from west to east on its axis, the whole of sky (or the zodiac with which an astrologer is concerned) appears to come up (or rising) from below the horizon gradually** and the **sign** or **rashi** (and more particularly the exact degree of the zodiac or that sign) **rising in the eastern horizon,** is known as the 'lagna' or 'ascendant'. As **the lagna or ascendant or the sign of zodiac rising on the** *eastern horizon of a place at any time,* **is dependent on the rotation of earth on its axis due to which the time system known as the 'Sidereal Time'** is also created, so it becqmes evident that the **rising sign or the lagna, in turn, is dependent on the sidereal time of the place at the given moment or epoch.** It therefore transpires that in order to know the **lagna or the rising sign for a particular moment** or epoch (be it a birth of a child or birth of a question, incident or accident etc.) it is necessary to first

calculate the **sidereal time of the moment at that place** where the birth of a child or a question or incident has taken place. Students may please refer to the **Tables of Ascendants by N.C. lahiri** and see themselves that the Ascendants for the different latitudes are given with reference to the sidereal time only. We therefore now proceed to discuss the method to calculate the **sidereal time** of a given moment or epoch.

6.3 How to calculate the Sidereal Time of a given moment or Epoch

Students are advised to refer to the **Tables of Ascendants** by N.C. Lahiri and proceed as follows :

Alternatively, see column 4 of each month that contains sum total of Step 1 and Step ll for the relevant date from current years' ephemeris and follow further from step 3 onwards as narrated here under :

Step 1 :   Note down the sidereal time at 12h noon local mean time for 82°30E longitude for 1900 AD for the day and month of the given moment from Table 1 at page 2.

Step 2 :   Note the correction for the given year from Table ll given on pages 3 and 4 of the book and apply to sidereal time in step 1.

Step 3 : . Note the correction for the different localities from Table III given on page 5. A detailed list of principal cities of India has been given on pages 100 to 107. The last column of the table indicates the correction to the 'Indian Sidereal Time'. Similarly the table for the foreign cities has been given on page 109 to 111 of the book and the last column of the table again indicates the correction to the Indian Sidereal Time.

Step 4 :   The correction for the year (step 2) and the
            correction for the place (step 3) should be applied
            to the sidereal time noted in step 1 according to
            the sign (+) or (-) prefixed to the correction as
            shown in the respective table. Having applied
            these corrections, the result obtained (let us call
            it'A') will represent the Sidereal time for the
            given date, year and place but will be for the
            local noon *i.e.* 12 hrs, as we have not yet applied
            the correction for the hour and minutes before
            or after the local noon, as the case may be, for
            the given moment.

Step 5 :   Convert the given time of epoch into LMT by
            applying the LMT correction. This has been
            discussed elaborately in great detail and
            explained with the help of examples also vide
            para 5.8 of the preceding chapter. However the
            quantum and the sign (+, -) of the correction to
            be applied to the IST or ZST, as the case may
            be, has also been indicated in the tables of
            Ascendant at pages 100 to 107 for principal cities
            of India under column LMT from IST and, at
            pages 108 to 112 for foreign cities under column
            LMT from ZST.

Step 6 :   As the **Sidereal** time noted in the step 1 pertains
            to the local noon, we have to find out as to how
            many hours before or after the local noon, is the
            given time of the moment or Epoch. In other
            words we have io find out the "Time Interval"
            between the Local Mean Noon (LMN) and the
            LMT of the given moment. So, in case the LMT
            of the given moment is before noon, subtract it
            from 12:00 hours. In case the LMT of the given
            moment is in the afternoon, the LMT itself
            becomes the Time Interval (T.I.) also because

after 12 noon our watches show 1:00 PM and not 13:00 which means that 12 hours have already been deducted.

Step 7 :   The Time Interval (T.I.) worked out in step 6 above is to be *increased* by applying the correction given in table IV which gives the correction for hours and minutes of the T.I. By applying this correction we get the *Increased T.I.* Let us call it (B).

Step 8 :   The 'Increased T.I.' (B) is added to the corrected Sidereal Time (A) in step 4 above in the case of PM (afternoon) births or epoch and, subtracted from the (A) in the case of AM (before noon) births or epoch, as the case may be. The result thus obtained is the Sidereal Time of the birth or epoch or the given moment. The above mentioned eight steps can be explained with the help of a practical example or illustration.

Example 1 : *Find out the Sidereal Time of birth of a native born at Delhi on Tuesday the 25th October 2005 at 09:30 AM (IST)*

Solution : *Use Tables of Ascendants* by N.C. Lahiri

Step 1 :	Sidereal Time at 12h noon on 25 October 1900 (page 3)	=	$14^h : 12^m : 45_s$
Step 2 :	Correction for the year 2005 (from page 4)	=	$(+) 2^m : 16_s$
Step 3 :	Correction for Place (Delhi) (page 5 as well as page 102)	=	$(+) 0^m : 03_s$
Step 4 :	Sid. Time on 25th Oct. 2002 at Delhi, at noon (A)	=	$\underline{14^h : 15^m : 04_s}$
Step 5 :	IST of birth (given)	=	09 : 30 : 00
	LMT correction (page 102)	=	(-) 21 : 08
	Therefore LMT of Birth	=	09 : 08 : 52

			h m s
Step 6 :	TI from noon (subtract the LMT from 12h being AM birth) (12 hrs - 9 hrs 8 mts 52 secs) =		02 : 51 :08
Step 7 :	Correction to increase the TI from table IV (page 5)		
	for 2 hrs	=	00 :20
	for 51 min 8 sec	=	00 :09
	Therefore Increased TI (B) =		02 :51 :37
Step 8 :	Being AM Birth (A)-(B) =		14 : 15 :04
			(–) 02 : 51 : 37
	Sidereal Time of birth	=	11 :23 :27

Example 2 : *Find out the Sidereal Time of birth of a native born at New York on 25th October 2005 at 09:30 AM (ZST)*

Solution : *Use Tables of Ascendants* by N.C. Lahiri

			h m s
Step 1 :	Sidereal Time for 25 Oct 1900 at 12 noon LMT at 82°30E long. (page3) =		14 : 12 : 45
Step 2 :	Correction for the year 2005 (page 4)	=	(+) 2 : 16
Step 3 :	Correction for place of birth (New York) page 111	=	(+) 1 : 43
Step 4 :	Sidreal Time on 25th October, 2002 at noon at New York (A)		= 14 : 16 ':44
Step 5 :	ZST of birth (given)		= 09 : 30 :00
	LMT correction (page-111)	=	(+)04 :00
	Therefore LMT of Birth		= 09 : 34 ;:00
Step 6 :	T.1. from noon (12 hrs - 9 hrs 34 mts)		= 02 : 26 :00
Step 7 :	Correction to increase T1		
·	for 2 hrs	=+	20
	for 26 min	=+	04
	Therefore Increased T1 (B)		= 02 : 26 :24

Step 8 :   Being AM Birth   (A)-(B)   = 14 : 16 : 44

                                                                     (-) 02 : 26 : 24

            Sidereal Time of Birth   = 11 : 50 : 20

Example 3 : *Find out the Sidereal Time of birth of a native born at Sydney (Australia) at 3:25 PM (ZST) on 17th August 2005*

Solution : *Use Tables of Ascendants* by N.C. Lahiri

		h	m	s

Step 1 :   Sidereal Time on 17 August 1900   = 09 : 40 : 43
            at 12 noon LMT at 82°30'E (page3)

Step 2 :   Correction for the year 2005 (page 4)   =   *(+)* 2 : 16

Step 3 :   Correction for place of birth   =   (-)00 : 45
            (Sydney) page 111

Step 4 :   Sid. Time on 17th August, 2005 at
            noon at Sydney   (A)   = 09 : 42 :: 14

Step 5 : ZST of birth (given)   = 03 : 25 :;00
            LMT correction (page 111)   =   (+)04 :;48
            Therefore LMT of Birth   = 03 : 29 ::48

Step 6 :   T.I. from noon, being PM
            birth, the LMT itself becomes the TI   = 03 : 29 :48

Step 7 :   Increase in TI (Table IV page 5) (Available at page: 33
            ibid at the end of chapter 3 of this book)
            for 3 hrs   = +   30
            for 29 min 48 sec   = +   05
            Therefore Increased TI   (B)   = 03 : 30 ::23

Step 8 :   Being PM Birth   (A)+(B)   = 09 : 42 :: 14

                                                                     (+) 03 : 30 :23

            Sidereal Time of Birth   = 13 : 12 :37

Note: See current Ephemeris of 2005 against 17th August 2005 in column No: 4 you will **find the figure 9-42-59.** If we take the sidereal Time given in current Ephemeris this will cover 1 (noting sidereal time) and **2ʳᵈ** (noting year's correction) step as advised on page 50 (para

6.3), 3rd step (correction of place) is to make correction to Indian Sidereal Time (as adopted from Lahiri's Indian Ephemeris for Indian cities (P 144 to 153) and for foreign cities (P-155 to 157) in last column of the tables given.

Example 4. For Date of birth is 26th January 2011, the sidereal Time at Noon of the day is as under:

Use of Table of Ascendant

	H	M	S
Sid. T. at Noon of 26-1-1900			
For 82°30'E (P-2)	20 - 20 - 32		
Correction for the year 2011 (P-4)	+ 0 - 0 - 2 9		
	20 - 20 - 51		

Only based on Ephemeris 2011 at page 16 of Ephemeris of 2011 in month of January against 26 Jan 2011 sid. Time given is:

20 - 20 - 51

Both the calculations are same. Now follow other steps (3) correction for place of birth 4 and 5 LMT correction to birth time for Indian cities (page 146 to 155) and for other countries (P-157 to 159) (6) T.I. from noon, for (as is necessary) (7) Increase in T.I. on aforesaid pages in last Column Heading (corr. to IST) we can calculate Ascendant from the current Ephemeris without using Table of Ascendant.

6.4 Caution

We hope that by now the students would have understood the methodology to work out the Sidereal Time very clearly. However before we end we would caution our students to note carefully the few points mentioned below :

6.4.1 Unlike the civil time (LMT or GMT or IST or ZST) the Sidereal Time is never expressed in terms of AM or PM. It is always starting at 'O' hour and goes upto 24 hours after which it again starts as 0^{hour}.

6.4.2 *WAR TIME :* From **1st Sept. 1942 to 14th Oct. 1945, the Indian Standard Time (IST) was advanced by**

one hour all over India including modern Bangla Desh and Pakistan for purposes of daylight saving during the war period and was thus ahead of GMT by 6H 30 min. Therefore any recorded time during this period (Both days inclusive) must be reduced by 1 hour to get the corrected IST before LMT correction is applied to obtain the LMT of birth. (Provided the same correction is not made while noting down the time on the record.)

6.4.3 *SUMMER TIME* : Students are advised to refer to page 112 of their *Tables of Ascendants,* also page 157 of Ephemeris of 2011, and read carefully each and every word thereof in order to acquaint themselves with the summer timings being observed in Britain, USA, Canada, Mexico, USSR and other European countries mentioned therein. The recorded time falling on the dates/period of summer timings indicated in page 112 and also on page 157 of Ephemeris of 2011, must therefore be corrected first as applicable, *before* it is converted to local Mean time of epoch.

EXERCISE 6

Question : Find out the sidereal time of Birth in respect of under mentioned particulars/details of Birth :

S. No.	Date of Birth (DOB)	Time of Birth (TOB)	Place of Birth (POB)
(a)	21-2-2011	5:25 AM (IST)	Meerut (UP, India)
(b)	11-7-2011	10:30 PM (IST)	Bangalore (India)
(c)	17-8-2011	6:24 PM (ZST)	Tokyo (Japan)
(d)	23-4-2011	4:40 PM (LMT)	Seoul (S.Korea)
(e)	10-12-2011	2:20 PM (ZST)	Greenwich (England)
(f)	5-6-2011	11:30 PM (ZST)	Rangoon (Burma)
(g)	25-12-2011	00:29 AM (IST)	Jaipur (Rajasthan, India)
(h)	01-01-2011	12:00 Noon (LMT)	Kakinada (Andhra Pradesh, India)
(0	23-9-2011	12:21:08 PM (IST)	New Delhi (India)
(j)	25-4-2011	5:30 PM (ZST)	New York (USA)

Note : For the facility of the students, the Questions for calculating the sidereal time of birth for current year are given. The student can try for the years 1821, **1816, 1911, 1923** or any other year to have practice.

SUNRISE AND SUNSET

7.1 In the previous lesson we have seen the methodology for working out the Sidereal Time of birth or of an epoch. With this Sidereal Time we *enter the relevant Table* of Ascendants for the latitude of the place of birth to find out the Ascendant. However, before we proceed on to find the ascendant or lagna or the rising sign, we deal with the subject of sunrise and sunset in this lesson. The time of sunrise, sunset etc is very useful in astrological calculation to find out the *dinmaan, ratrimaan (i.e.* the duration of day and night), *Ishtakala* or *Ishtaghati* which forms the basis to calculate the lagna rising by the traditional method, *Kaal horas, Kaal velaas, Hora lagna, Mandi, Rahu kaalam* etc., which have great significance in the Hindu Astrology.

7.2 Sunrise

The exact moment at which the Sun first appears at the eastern horizon of a place is time of sunrise. As the Sun has a definite diameter, the solar disc takes some time *i.e.* about 5 to 6 minutes to rise. Therefore, from the first visibility of the upper limb of the solar disc to the time when the bottom limb of the solar disc is just above the horizon of the place, there will be a time diference of about 5 to 6 minutes. It has, therefore, been acknowledged that for astrological purpose we may take the moment at which the centre or the

middle of the solar disc is at the eastern horizon of the place as the sunrise time for that place.

7.3 Sunset

Similarly the sunset for a particular place is the exact moment at which the centre or the middle of the solar disc is at the western horizon of the place.

7.4 Apparent Noon

This is marked when the centre of the Sun or the middle of the Solar Disc is exactly on the meridian of the place. The apparent noon is almost the same for all places.

7.5 *Alias* **and** *Ratri*

Ahas is the duration of day *i.e.* the duration of time from sunrise to sunset. *Ratri* is the duration of time from sunset to sunrise. On the equator, the Ahas and Ratri are always 30 ghatis or 12 hours each, while on other latitudes the sum of Ahas and Ratri will be 24 hours or 60 ghatis.

7.6 Calculation of time of Sunrise and Sunset

In this lesson we propose to calculate the time of Sunrise and Sunset by the method of 'interpolation' from the given data in the Ephemeris. However there is a proper method to calculate the time of sunrise and sunset without making any reference to the given data in the Ephemeris. We don't propose to discuss that method through this lesson as the same is not only cumbersome but involves too much mathematical calculation needing enormous time which is not warranted being beyond the scope and purview of these lessons. However we may advise those students who wants to dive deep into the subject of sunrise and sunset to refer to Chapter V (Sunrise and Sunset) of the book titled *A manual of Hindu Astrology* by Dr. B.V. Raman, wherein a detailed exposition of the subject has been given by the learned author.

7.7 Calculation of time of Sunrise and Sunset by Method of Interpolation

Step 1 :   As the time of sunrise or sunset differs from latitude to latitude we must first of all note the latitude for the place where the time of sunrise etc., is desired.

Step 2 :   Refer to page 100 and 101 of Lahiri's *Indian Ephemeris* for the year 2011 and select two such consecutive dates between which the date for which the sunrise time is desired, falls. Similarly select two such consecutive latitudes from the table at page 100 and 101 so that the latitude of our desired place falls in between the two latitudes so selected.

Step 3 :   Note down the timings of sunrise or the sunset as the case may be, for the above selected dates and latitudes as given in the table.

Step 4 :   Find the time of sunrise and/or sunset by interpolation (simple ratio and proportion method). The time so obtained will be the Local mean Time (LMT) of the time of visibility of the upper limb of the solar Disc. Add 3 minutes to the time of sunrise and deduct 3 minutes from the time of sunset to get the LMT of coincidence of the centre of the solar disc with the horizon.

Step 5 :   In case the time is required in terms of IST or ZST, apply LMT correction as applicable by reversing the (+) or (-) sign prefixed to the LMT correction as given in the list of table of Ascendants from Page 100 to 111 or Current Ephemeris pages 146 to 159.

7.8 The above method has also been indicated at page 109 of Lahiri's *Indian Ephemeris* for the year 2011 and students are advised to follow the same with advantage. However we also give below the illustration to explain the steps mentioned above more clearly to our students.

Example 1 : Desired IST of Sunrise and Sunset at Delhi on Oct 27.

Solution : Use pages 90 to 101 of Lahiri's *Indian Ephemeris* for 2011.

Step 1 : Latitude of Delhi (Page 148 of Ephemeris for 2011)
            = 28°39'N or 28.65°N

Step 2 : Dates selected are Oct 23 and Oct 31,
             Latitudes selected are 20°N and 30°N

Step 3 : The data given for the above mentioned dates and
             latitudes at page (100-101) of the Ephemeris 2011
             is as follows:

	Sunrise (LMT)		Sunset (LMT)	
Date	Latitudes		Latitude	
	20°N	30°N	20°N	30°N
Oct 23	5:57	6:07	5:31	5:21
Oct 31	6:01	6:13	5:26	5:14

Step 4 : We can now obtain the values for Oct 27 by simple
             interpolation which are as follows :

Oct 27   5:59   6:10   5:28.5   5:17.5

variation for 10°= (+) 11   (−)11

variation for 8.65° = $(+)\dfrac{11}{10}\times 8.65$ $(-)\dfrac{11}{10}\times 8.65$

(Since Delhi's Latitude is (28.65°-20° = 8.65°)
i.e., 8.65° away from 20° Latt.)

	= 9:52 min	9:52 min.
or say	= (+) 9 min	(-) 9 min

Therefore LMT of
upperlimb visibility = 6:08 AM   5:19 PM

LMT for centre of
solar disc   =   (+) 0:03   (-)0:03
                        6.11 AM   5.16 PM

Step 5 : Students may now compare this with the Time of sunrise and sunset (upper Limb) for Delhi given on page 97 of Ephemeris which is as follows for 27 Oct.

	6:29 AM	17.41
	IST of Sunrise (Upper limb)	IST of Sunset (Upper limb)
Deducting 21^m	0:21.1	0:21.1
(being LMT	6:08 AM	5:20 PM
correction)	LMT of Sunrise (Upper limb)	LMT of Sunset (Upper limb)

Step 6 : Solar Disc
correction   (+) 0 : 03.5   (-) 0 : 03.5
LMT for Center 6 : 11 AM   5 : 17 PM
of Solar Disc
which is the same as worked out in Step 4.

EXERCISE - 7

Find out the IST or ZST (as applicable) of Sunrise and Sunset for the dates and places given below :

(a) July   27 at New York
(b) Feb   21 at Meerut (UP) India
(c) Oct   17 at Munich
(d) Dec   25 at Tokyo (Japan)
(e) Jan   26 at Calcutta
(f) June   06 at Washington D.C.
(g) April   09 at Harare
(h) Sept.   11 at Sydney

CASTING OF HOROSCOPE I
MODERN AND TRADITIONAL METHOD

8.1 The horoscope is a map of heavens for a given moment at a particular place. It indicates the sign of Zodiac rising on the eastern horizon of the place at the given moment which is known as the lagna or the Ascendant. It is also known as the first house and the successive Rashis/signs becomes the successive houses or Bhavas (as called in Hindu Astrology). Apart from the lagna or the Ascendant this map also indicates position of various Rashis and Planets at the given moment/epoch.

8.2 Forms of Horoscope

There are many types/forms presently in vogue in different parts of India as well as in the European countries. For the reference of students we give here some of the most commonly used formats by Astrologers in India and abroad. Students are advised to make themselves familiar with these 'Formats', though they may follow any one of these appealing to be the most convenient :
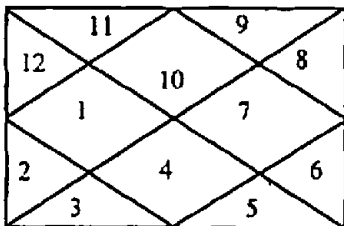
Type I

Pisces Meena	Aries Mesha	Taurus Vrisha	Gemini Mithuna
Asc			

Type II

8.2.1 *TYPE I* : This is the format which is commonly used in North/North-west part of India. The top middle portion is always treated as the lagna or Asc or the I House and the number of the Rashi/sign rising at the moment of birth on the eastern horizon of the place is indicated here e.g. 10 for makar or Capricorn. Then the counting of houses is done anti-clockwise. So the II house will have the sign/ Rashi next to Capricorn (Makar) *i.e.* Kumbha or Aquarius written there as No.11. The number of the successive Rashi/ sign is then written consecutively one after the other in the succeeding houses, anticlockwise. Then the position of the planets at the moment is worked out and posted in the horoscope in the respective rashi/sign occupied by them in the Zodiac.

8.2.2 *TYPE II* : This type of format of Horoscope is commonly used in the Southern part of India. In this type the counting of houses is in clockwise direction. Here the position of Rashis/sign are fixed for all the horoscopes, e.g. the top left hand square in the chart represent the sign Pisces (Meena) and succeeding Squares in clockwise direction will represent Aries (Mesha), Taurus (Vrisha), Gemini (Mithuna), and so on. As this sequence of sign/Rashis is fixed for all the horoscopes, these are never written in chart. The sign/ Rashis rising on the eastern horizon of the place or the lagna or Asc is marked in the appropriate sign in the chart as shown and word lagna or Asc is written in that sign. Afterwards the planets according to their position in the Zodiac at the moment are posted in the respective sign in the chart to make the map or the horoscope complete.

8.2.3 *TYPE III* : This type of chart is commonly used in Bengal and Neighbouring area. In a way it combines the two charts discussed earlier i.e. Type I and Type II in as much as the counting of houses is done anticlockwise (like Type I) but the position of Rashis/signs is fixed for all the

horoscope (as in the case of Type II). The other aspects like posting the position of planets etc., are similar to other charts. The lagna is written in the appropriate sign in the chart.

Taurus
Vrisha
Gemini
Mithuna

Aries
Mesha

Asc
Lagna
Makara
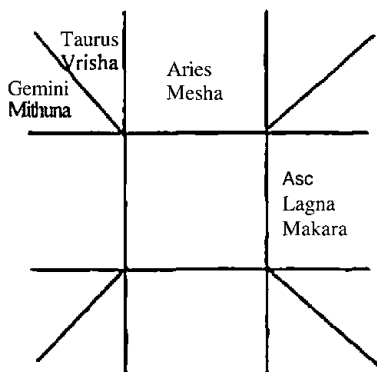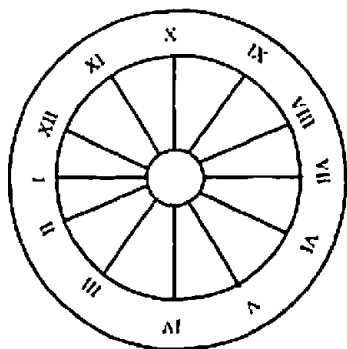
Type III   Type IV

8.2.4 *TYPE IV :* This chart is commonly used by Western Astrologers. Now a days some Astrologers in India particularly in Maharashtra have also started using this type of chart for the horoscopes. This is a circular chart as shown in the figure, the twelve Bhavas or houses are marked in chart and symbol along with the degree is also indicated on each bhava. In Indian (Hindu) Astrology, the cusps are treated as bhava **Madhya** or the middle point of the houses where as in Western Astrology, the Asc cusp means the beginning of the first house, the II cusp means end of Ist house and beginning of the II house and so on. The planets are also shown with their symbols only and the degrees of the zodiac acquired by a planet is also written along with the Planet in the chart.

8.3 Casting of Horoscope

The process of casting of horoscope involves two main activities. Firstly we have to find by calculation the exact degree of longitude of the Ascendant or the lagna. Secondly

we have to calculate the longitudes of all the nine planets or grahas mentioned earlier in chapter 1.

8.3.1 There are mainly two important methods to find out the lagna and the planetary position at the time of birth of a child or a question, event, or incident/accident. The first method is called the *modern method* by using the table of Ascendants and ephemeris. The other method is *traditional method* adopted by the Hindu astrologers where the horoscopes are prepared with the help of traditional Panchangas (almanacs, a kind of traditional ephemeris). Now a days with the advent of calculators, log tables, computers etc. comparatively more accurate horoscopes can be prepared by using modern method. In these lessons, therefore, our emphasis will be more on to the modern method. However for the academic interest of the students we will discuss the traditional method also at the appropriate time and place. But for the present let us proceed with the modern method of casting horoscope.

8.4 Modern Method of Casting Horoscope

As already mentioned in para 8.3 above it involves or consists of two stages, viz:

(a) calculation of longitude of lagna/Asc

(b) calculation of longitudes of planets

We will therefore take up the above two stages one by one.

8.4.1 CALCULATION OF LONGITUDE OF LAGNA: We have already discussed in earlier lessons that the long. of lagna or the Ascendant is calculated by using the Tables of Ascendants which gives the Ascendants rising at different latitudes for each 4 minutes interval of Sidereal time. Accordingly the Sidereal time of Birth/epoch is very important to know the lagna/Ascendant. In lesson 7 we have discussed at length how to find out the sidereal time of

birth/epoch and we hope that by now our students are well conversant with the calculation of sidereal time of the epoch. We will now advise our students to proceed as follows to calculate the longitude of the lagna or the Ascendant:

Step I :   Calculate the Sidereal time of **birth/epoch** by following the 8 steps given in chapter 6.

Step 2 : In the book *Table of Ascendants* by N.C. Lahiri, locate the page where Ascendants for the appropriate latitude *i.e.* the latitude of the place of the Birth are given. In case table for exact latitude is not available, then the other table for the latitude which is nearest to the latitude of the place of birth could be made use of. In case a more precise work is needed, the students may find out/calculate the Ascendant at two consecutive latitudes falling either side of the given latitude & then find out the exact longitude by interpolation of the two Ascendants. However we feel that in most of cases the calculation of Ascendant for the nearest latitude may serve the purposes and the interpolation may not be necessary.

Step 3 :   Calculate the **Ascendant/lagna** with the help of the appropriate Table.

Step 4 : As the table of Ascendants by N.C. Lahiri gives the Nirayana longitudes of Ascendants only, it is necessary to apply the Ayanamsha correction as given at Page 6 of the book to get the correct lagna. The above steps can be best explained with the help of an example.

Example 1 : Calculate the longitude of **Ascendant/** lagna for the Native Born on 20-8-1944 at **8-11-40** at Bombay.

DOB = 20-8-1944 at 8 - 11 - 40 Mumbai

                                                    H M S

Step 1 :   Sidereal Time at 12 Noon
            (on 20th Aug. 1900):   9-52-33

            Correction for the year of birth

Step 2 :   *i.e.,* 1944.   + 0-1-21

Step 3 :   Correction to Sidereal Time: + 0-0- 6
            as per Ephemeris 2011. (Page 152)

Step 4 :   Sid. Time for 20th August   (A) 9-54-00
            1944 at 12 Noon

                                                    H M   S

Step 5 :   I.S.T. of birth as given   8-11-40

Step 6 :   WARTIME Correction as mentioned⊖ 1-0-0
            at page (V) of Table of Ascendants.

Step 7 :   Corrected I.S.T. of birth   7-11-40
            L.M.T. correction (page 152 of
            Ephemeris 2011)   0 38-36

            L.M.T at birth   6-33-04

Step 8 :   T.I. from Noon (Subtract this

            LMT from 12 hrs (12 0 6-33-04)   5-26-56

Step 9 :   Correction to T.I (Table IV)

                (i) 5 hrs   0-49^m   +_____53

                (ii) 24 mts   0-4^m

                (iii) 2 mts   0s   (B) 5-27-49

Step 10 :   Being AM birth deduct (B) from (A)
            9-54-00 © 5-27-49 =   (C) 4-26-11

            S.T. @ Epoch

Step 11 :   For mumbai, use Ascendant Table
            at page 136 of Ephemeris 2011

Note: Also at page 7 of current Ephemeris under heading
"Time reckoning in India".

(*i*) 4ʰ 2?"	4ˢ–15°–04'
4ʰ 26ᵐ	4ˢ–14°–50'
1 m (or 60 s) =	(+) 14
(*ii*) for 4ʰ 26ᵐ	4ˢ–14°–50'

For 11 Sec = $\dfrac{14}{60} \times 11 = \dfrac{154}{60}$ + 02

Step 12 :   4ˢ–14°–52'

Ayanamsha correction for 1944   (-) 0 - 0 - 5

(Page 144 of 2011 Ephemeris)   4ˢ–14°–47'

Simha Lagna   14° 47'

Example 2 : Calculate the Asc or lagna for the native of example No. 2 in para 6.3.

Solution : Referring to example 2 of para 6.3 we get :

Step 1 :   Sid. Time of Birth = 11-50-20 (page 57)

Step 2 :   The latitude of New York is 40° 43'N
(This can be noted from the table given at page 111 of Tables of Ascendants). An appropriate table giving the longitude (nearest latitude 41°-0' North) is given at page 62. So we use this table to calculate the Asc.)

Step 3 :   Calculate the lagna or Asc as follows :

Sidereal Time	Ascendant/lagna
11ʰ 52ᵐ 0ˢᵉᶜ	7ˢ 16° 17'
11ʰ 48ᵐ 0ˢᵉᶜ	7ˢ 15° 28'

variation in 4 minute = 49'
(or 240 sec)

Variation for

2mts 20secs (or 140 secs) = $\dfrac{49}{240} \times 140$

                  = 29' (Appx.)

So lagna for $11^h50^m20^s$ $= 7^s\ 15°\ 28' + 29'$

                                                    or

                                $= 7^s\ 15°\ 57'$

Step 4 :   Ayanamsha correction
                    for the year 2005 $= (-)\ 0°\ 56'$
                Therefore correct Lagna $= 7^s\ 15°\ 01'$
                or Ascendant is Scorpio $15°\ 01'$

EXERCISE - 8

Question : Students may please choose the places situated in northern Hemisphere out of the 10 places given in Question of Exercise 6 and work out the longitude of lagna/Asc in all those cases.

CASTING OF HOROSCOPE II

MODERN METHOD

9.1 Calculation of Ascendant for places situated in Southern Hemisphere (or the Southern Latitudes)

The methodology for calculation of lagna/Ascendant for places located in Southern hemisphere/southern latitude is exactly similar as for Northern latitude, if we have with us Tables of Ascendants for Southern Latitudes. The Lahiri's tables available to us are for Northern latitude. If the same tables are to be used for calculating the Lagna rising in places situated in the Southern latitudes, it is but obvious that some modification is definitely called for. As such **for calculating the Lagna in Southern Latitude with the help of Tables for Northern Latitude, we have to proceed as follows** :

Step 1 : **Find out** the Sidereal Time of Birth by following the eight steps, 1 **to** 8 given in chapter : 6 as **done in the case of Northern Latitude.**

Step 2 :   Add **12** hours to the Sidereal time worked out in step 1. If the total Sidereal Time after adding 12 Hours exceeds 24 **hrs.**, then subtract 24 Hours from it, and retain the remainder. The Sidereal Time so modified will be called as modified Sidereal Time.

Step 3 :   Locate the appropriate table for the Latitude of
            the place of birth in the Tables of Ascendants
            for Northern Latitudes.

Step 4 :   By using the Modified Sidereal Time worked
            out in step 2 above, calculate the Ascendant in
            the similar way as in chapter 8 using the Table
            located in step 3.

Step 5 :   Apply Ayanamsha correction (Page-6) for the
            appropriate year, i.e. the year of birth.

Step 6 :   Add 6 Signs to the Ascendant Calculated/worked
            out in step 5 to get the correct Lagna. If the Asc.
            exceeds 12 signs then subtract 12 signs from it.

   9.2 Students may please note that modification
incoported above is applied only for the places in Southern
Latitudes if the *Tables of Ascendants* used is for Northern
Latitudes and vice-versa. If the *Tables of Ascendants* are
available for the same hemisphere in which the birth has
taken place, no modification is necessary. Students are also
advised to read the Example 3 given in the Tables of
Ascendants for Northern Latitudes by N.C. Lahiri, at page
- *(viii)* in the beginning of the book. We will now explain
the above mentioned 6 steps with the help of an example.

   Example 1 : Calculate the lagna for the native of
example no. 3 in chapter 6. (DOB 17-8-2005 TOB 15-25
hrs. ZST)

Solution : Place Sydney, Latitude : 33° 52' South

Step 1 : Sid. Time of Birth = 13^h 12^m 37^{sec} (Ref. Example
          3 of Chapter 6)

Step 2 : By adding 12h we get the modified Sidereal Time
          as 25^h 12^m 37^{sec}. As it exceeds 24^h, deduct 24 hrs.
          Therefore, Modified Sidereal Time = 1^h 12^m 37^{sec}.

Step 3 :   Latitude of Place of Birth is 33°52'S. Hence use
the Table for 34°0'N (Page-55)

Step 4 :   The Lagna is calculated as under :

	Sidereal Time	Lagna @
	1^h 16^m 0^s	3^s 7° 57'
	1^h 12^m 0^s	3^s 7° 8'

@ To be corrected

Variation in 4 Mins. = 49'

(or in 240 Secs)

Therefore, variation in 37 Sec.   = 49÷240× 37

= 7.55

or Say   = 8'

Hence Lagna for 1^h 12^m 37^{sec} = 3^{s}7°8' + 8'

= 3^{s}7°16'

Step 5 :   Apply Ayanamsha Correction for 2005 = (-)0° 56'
Corrected Lagna in North Latitude 3^{s}7°16' (–)54'
= 3^{s}6°22'

Step 6 :   Add 6 signs to get the lagna in Southern Latitude
= +6^5
Therefore, Lagna or Asc   = 9^{s}6°22'
Capricorn 6°22'

Example 2 : Calculate the lagna for the native born on
14th November 2005 at 4hrs 48mts (ZST) in Lima (Peru).

Solution : Refer N.C. Lahiri's Table of Ascendant at page
110 and note birth place *i.e.* Lima (Peru) and latitudes,
longitudes, time corrections etc.

Time Zone (-) 5 hours   Latitude   12° 02' south

Longitude   77° 02' west L.M.T. from ZST(-)8 min
08 sec.

I.S.T. from Z.S.T. + 10^h 30^m, correction to Indian
Sidereal Time (+) 1mt. 45 secs.

Step 1 : Sidereal Time of 14 Nov. 1900   h   m   s
          12 noon at Longitude 82°30'East (Page 3) = 15 : 31 : 37

Step 2 : Correction for the year 2005
          (page 4)   =(+) 0 : 2 : 16

Step 3 : Correction to I. Sid. Time (P-110)   =(+) 0 : 01 : 45

Step 4 : Sid. Time of 14th Nov. 2005 of Peru   _____
          at 12 noon   (A)   = 15 : 35 : 38

Step 5 : ZST of the birth of native   = 4 : 48 : 00

Step 6 : LMT Local Time Correction (page-110)   =(−) 0 : 8 : 08

Step 7 : L.M.T. of birth   = 4 : 39 : 52

Step 8 : As it is fore noon birth

          T.I. from noon (12 hours(-) $4^h39^m52^{sec}$) = 7 : 20 : 08

Step 9 : Correction to increase the T.I. (Page 5) =(+) 01 : 12

Step 10: Hence the increased T.I. (B)   = 7 : 21 : 20

Step 11: Being A.M. birth (A)-(B)
          (15 : 35 : 38 (-) 7 : 21 : 20)   = 8 : 14 : 18
Step 12: The Sidereal time of birth   = 8 : 14 : 18

Step 13: The Latitude indicates the birth place is in southern
          Hemisphere. But the Lahiri's Table of Acendant is for
          Northern latitudes. Therefore the method prescribed in
          para 9.1 is to be used *i.e.* add 12 hours to the sidereal
          time available at step 12.

Step 14: Modified Sidereal Time
          12hrs + 8^{hrs} 14^{mts} 18^{sec} = 20 : 14 : 18

Step 15: Calculate Ascendant on the basis of Latitude 12°-02' North
          (P-19 of Table of Ascendant), the table is for 12° North,
          which is nearest. The result is as under:

Sidereal Time			Ascendant		
Hrs	Mts	Secs	Rasi	degree	mts
20	16	00	0	16	36
20	12	00	0	15	30
0	04	00	0	1	06'

Modified S.T. of birth = 20 : 14 : 18, which is more by 0 : 2 : 18 (20 : 14 : 18 (-) 20 : 12 : 00) or 138 secs

Variation in 4 mins or 240 secs = 66'

$$\text{Variation in 138 seconds} = \frac{66}{240} \times 138 = \frac{9108}{240}$$

$$= 37.95$$

or =38'

Hence Ascendant is 0/15° 30' + 38'   or 0/16° 08'

or Mesha   = 16° 08'

Aynamsha correction (P-6)   = (-)   0° 56'

Correct Ascendant   = Mesha   15° 12'

Step 16:   12° 2' is Southern Latitude, hence
add 6 signs to the above (6ˢ + 0/15° 12') = 6ˢ/15°-12'
i.e. Tula Ascendant of 15° 12'

Step 17:   Hence the native born with Tula 15°12' Ascendant.

EXERCISE - 9

Calculate the Ascendants for the data given below :

(a) Jakarta	21-4-1943	5:25 AM **(IST)**
(b) Mombasa	11-7-1923	10:30 PM **(IST)**
(c) Narobi	17-8-1986	6:24 PM (ZST)
(d) Canbera	23-4-1972	4:40 PM (ZST)
(e) Sydney	15-9-1936	3:25 AM **(IST)**

CHAPTER 10

CASTING OF HOROSCOPE III
MODERN METHOD

10.1 Calculation of Longitudes of *Planets/Planetary Position at Birth* or *Graha Spashta*

We have already advised our students to purchase and have with them a complete set of Lahiri's Indian Ephemeris (Please refer Para 3.13 in Chapter 3). A perusal of these Ephemeris reveals that :

(a) In the yearly Ephemeris e.g. for the year 2001, 2002, 2003, 2004 and 2005 the daily position of all planets including the Moon has been given at 5:30 AM (IST).

(b) In the condensed Ephemeris for the year 1941-51, 1951-61, 1961-71, 1971-81, 1981-85, 1986-1990, 1991-1995 & 1996-2000 etc., daily position of Moon has been given for 5:30 AM (IST) where as for the remaining Planets except Rahu/Ketu, the position has been given at 5:30 AM (IST) for every alternate day. Rahu's position has been given for 1st of each month for true as well as mean Rahu.

(c) In the Ephemeris (condensed) for the years 1900 to 1941, the position have been given for 5:30 PM (IST) daily for Moon, twice in a week *i.e.* for Sundays and Wednesdays for Mercury and weekly position *i.e.* for every Sunday in respect of Saturn, Jupiter, Mars, Sun, and Venus. Rahu's

position has been given monthly *i.e.* for 1st of each month. The Rahu's position in this Ephemeris is for 'Mean' Rahu only and not for 'True' Rahu. *True* Rahu is by considering the actual *oval/elliptical* shape of orbit of Moon and the ecliptic, where as *Mean* Rahu is calculated by considering their orbits as perfect circle. As the later is not factually correct we prefer to have only *True* Rahu in our calculations as far as possible.

10.2 Keeping in view the above three different types of data available in the Ephemeris, we propose to discuss the calculation of planetary positions in three different parts. Accordingly, we will first of all take the Ephemeris for the year 2005 and calculate the planetary position for the given time of Birth of a native. It should be noted that the Lahiri's Indian Ephemeris gives the position of Planets either for 5 :30 AM (IST) or 5:30 PM (IST). *Accordingly any time of Birth whether it is given in LMT or ZST or GMT must be first converted to IST so as to use these Ephemeris.*

10.3 Calculation of Planetary Position by using Yearly Ephemeris

The calculation of Planetary position is best explained with the help of an example. However before we take up an example it is necessary to advise the students that while selecting the two consecutive dates from the ephemeris for obtaining the reference position of planets, care must be taken to see that the dates should be such so that our date and time of birth falls in between the two for convenience in interpolation.

Example 1 : Calculate the planetary position at the time of birth of a native at Delhi on Tuesday, the 25 Oct. 2005 at 09:30 am **(IST)** [Para 6.3 and para 8.4].

Solution : Use Lahiri's *Indian Ephemeris* for 2005 we will calculate the Moon's position first.

MOON (Page 34)

Position at 5:30 AM (IST) on 26/10/05	=3ˢ 19°02' 23"
Position at 5:30 AM (IST) on 25/10/05	=3ˢ 07°09' 14"
Motion in 24 hours	0ˢ11°53'09"
Time elapsed from 5:30 AM to 9:30 AM =	4 hours
Therefore motion in 4 hours	
(1/6th of 24 hourly motion)	= 0ˢ1°58'52"
Add position at 5:30 AM of 25-10-2005	= 3ˢ07°09'14"
Position at Birth	= 3ˢ09°08'06"
or Cancer	= 9° 8'

or rounding off we can say position of Moon = Cancer9°8'

Note : The position at 5:30 AM is indicated in the 7th column. The first column gives the dates of the month.

10.4 The above method of finding out the proportionate motion in 4 hours is by simple arithmetic or by using an electronic calculator. We can also find out this motion by using the log tables given at page (164-165) of the Ephemeris. However, as these log tables are proportionate and are meant for use with 24 hourly motion.

Therefore motion of Moon in 24 hours	=11° 53' 09"
Log of motion *(i.e.* 11° 53' 09" or 11° 53')	
(page 164)	=0.3053
Log of 4 hours	=0.7781
(Time Interval from 5:30 AM to Birth Time)	
Total	=1.0834

By taking antilog of this we will get the desired motion in 4 hours. Since there is no separate table, we have to locate the nearest figure to **1.0834** in the table and then read the degrees and minutes. We find that antilog of (nearest)

1.0865 is 1° 58', and
1.0828 is 1° 59'

Therefore variation of 37 is equal to 1' or 60"
So variation of 1.0865 (-.) 1.0834 i.e. 31 will be

$$\frac{60}{37} \times 31 = 50.27"$$

$$= 50.27"$$

$$\text{or say} = 50"$$

Adding this to 1°58' we get
motion of Moon in 4 hours   =   1°58'50"
Adding this to position of Moon at 5:30 AM
on 25-10-2005   = 3ˢ07°09'14"
Position of the Moon at Birth   = 3ˢ09°08'04"
or say   = 3ˢ09°08'

10.5 By looking at the above calculation student may feel that using logarithms is rather a cumbersome process. Actually it is not so. In the above calculations we have tried to show to the students that if more precision is required we can work out the longitudes of planets upto seconds (") of arc by log table also. However in most of the cases, calculation of longitudes of planets upto nearest Minute (') of arc will suffice or meet our requirement. Therefore we need not interpolate the figures while working out the Antilog and only the nearest figure will do. In the context of Moon, while taking antilog the nearest figure is 1.0828 for which antilog is 1°59' and this will meet our requirement. More over in the instant example the time interval from 5:30 AM to time of birth *i.e.* 9:30 AM is 4 hours which is a round figure and students can easily make 1/6 (of 24 hours motion) to get the 4 hours motion. However more often than not, the time interval may be like 7 Hrs 21 Min., 11 Hrs 39 Min.

and so on. In such cases the use of logarithms will be easier and quicker. Students may threfore decide for themselves as to which method *i. e.* the calculator method or the logarithm method appears to be the easier one and may adopt the same. The whole idea is only to get the proportionate motion of planets during the time interval from the given reference position to the time of birth.

10.6 With the above background we can now proceed to find out the longitudes of other planets at the time of birth. It may further be mentioned here that unless the planetary positions are required correct upto seconds (") of arc, we may round off the same to the nearest minute (') of arc by neglecting 30" or less and by adopting next higher minute for 31" and above. In the case of remaining planets, we have 24^h position for each. Our time interval 4^h is also fixed for all the planets. So we can find out/calculate their planetary position simultaneously in one operation in a tabular form. (See next page)

As Ketu is always opposite to RAHU or 6 signs away from RAHU, its longitude is calculated by adding 6 signs to the longitude of Rahu. Accordingly :

Longitude of True Rahu	=	11^s 19° 33'
Add 6 signs	= +	6^s
Longitude of Ketu	=	17^s 19° 33'
(If it exceeds 12signs, deduct 12 signs)		
	=	(-) 12'
Therefore Longitude of Ketu	=	5^s 19° 33'

Students will recall that we had calculated the longitude of lagna for this native *vide* Example 2 of Chapter 8 (Para 8.4.1) as 7^s 15° 01". We can now draw the chart as follows:

Calculation of Planetary Position at 09:30 AM (IST) 25-10-2005 (Example-1, Para 10.3)

Position of Planets at 5:30 AM IST on (Page 34)	Sun	Mercury	Venus	Mars (R)	Jupiter	Saturn	Rahu (D)
26-10-2005	6ˢ8°43'57"	7ˢ0°40'	7ˢ25°30'	0ˢ25°20'	6ˢ6°2'	3ˢ16°41'	11ˢ19°33'
25-10-2005	6ˢ7°44'08"	6ˢ29°22'	7ˢ24°27'	0ˢ25°38'	6ˢ5°49'	3ˢ16°38'	11ˢ19°32'
Motion in 24 Hrs.	59'49"	1°18'	1°3'	(−)18'	13'	3'	1
Log of Motion in 24 Hrs. (P-164)	1.3802	1.2663	1.3590	1.9031	2.0444	2.6812	—
Log of Time Interval *i.e.* 4 Hrs.	0.7781	0.7781	0.7781	0.7781	0.7781	0.7781	0.7781
Total	2.1583	2.0444	2.1371	2.6812	2.8225	3.4593	—
Nearest figure given in the Log Table	2.1584	2.0444	2.1170	2.6812	2.8573	—	—
By Taking Antilog of above figure we get proportion Motion in 4 Hrs.	0°10'	0°13'	0°11'	(−) 0°3'	0°2'	—	—
Add position on 25-10-2005	6ˢ7°44'08"	6ˢ29°22'	7ˢ24°27'	0ˢ25°38'	6ˢ5°49'	3ˢ16°38'	11ˢ19°33'
Position at 9:30 AM on 25-10-2005	6ˢ7°54'08"	6ˢ29°35'	7ˢ24°38'	0ˢ25°35'	6ˢ5°51'	3ˢ16°38'	11ˢ19°33'

10.7 Students may please note that the position of Planets in the heavens is dependent on the date & time only and is independent of the place of Birth. The place of birth is important for calculating the Rising Sign or Lagna or

Ascendant. Before we close this discussion we will take up another example to work out the longitude/position of planet.

Example 2 : Calculate the longitude of Planets for a native born at 10:24 PM (IST) on 11 July, 2005.

Example 3 : Calculate the longitude of planets for a native born at 7.55 PM on 14-2-2005.

Solution : As the place of birth has not been given we can not calculate the lagna. As such only the longitudes of planets are required to be calculated. This has been worked **out** in the tabular form in the next pages which are self explanatory

EXERCISE 10

Question 1 : Calculate the Planetary Position (longitudes of Planets) for following dates and time :

(a)	26-1-2005	01:20 AM (IST)
(b)	25-12-2005	7:30 PM (ZST) London
(c)	15-08-2005	7:30 AM (IST)
(d)	25-04-2005	00:45 AM (ZST) New York

Note : For (b) & (d) students may refer to Para 10.2.

Example 2 : Calculation of Planetary Position at 10 : 24 P.M. **(IST)** (22:24 hrs.) on 11-7-2005
(Example 2, Page 87)

Position at	Sun	Moon	Merc	Venus	Mars	Jup	Sat	Ra(R)
5.30 AM 12-7-2005	2ˢ25'49'30"	4ˢ25'56'09"	3ˢ21'51'	3ˢ22'45'	11ˢ26'08'	5ˢ16'55'	3ˢ5'29'	11ˢ23'48' 54"
5.30 AM 11-7-2005	2ˢ24'52'16"	4ˢ14'00'01"	3ˢ21'02'	3ˢ21'32'	11ˢ25'30'	5ˢ16'49'	3ˢ5'21'	11ˢ23'53' 25"
Motion in 24 Hrs	57'-14"	11'56'08"	0°-49'	1"-13'	0°-38'	0*-6'	0"-08'	(-) 04'31"
Log Motion in 24 Hrs.	1.4025	0.3034	1.4682	1.2950	1.5786	2.3802	2.2553	2.4594
Log of Time interval* (16ʰ54ᵐ)	0.1523	0.1523	0.1523	0.1523	0.1523	0.1523	0.1523	0.1523
Total	1.5548	0.4557	1.6205	1.4473	1.7309	2.5325	2.4076	2.6117
Nearest figure given in Log table	1.5563	0.4559	1.6143	1.4508	1.7270	2.5563	2.3802	2.6812
Taking anti-log we get the motion till time of birth	0°40'	8°24'	0°35'	0°51'	0°27'	0°4'	0°6'	(-)0°3'
Add position on 11.7.2005	2ˢ24'52'16"	4ˢ14'00'01"	3ˢ21'02'	3ˢ21'32'	11ˢ25'30'	5ˢ16'49'	3ˢ5'21'	11ˢ23'53'25"
Position at birth	2ˢ 25°32'16"	4ˢ 22°24'01"	3ˢ 21°37'	3ˢ 22°23'	11ˢ 25°57'	5ˢ16'53'	3ˢ 5°27'	11ˢ23'50'25"

*Time Interval for all planets from 5 : 30 A.M. to 10 : 24 P.M. = 16 Hrs 54 Min.

(R) Means Retrograde i.e. the planet appears to be moving backwards.

Note : Kelu's position would be six signs away from Rahu and hence not calculated separately.

Example 3 : Calculation of planetary position for the native born on 14-2-2005 at 7.55 p.m. (19.55 Hrs.) (Example 3, Page 87)

Position	Sun S o '	Moon S o '	Mer S o '	Venus S o '	Mars S o '	Jup (R) S o '	Sat (R) S o '	Ra(D) S o '
5.30 AM 15-2-2005 5.30 AM 14-2-2005	10 2 29 10 1 28	0 20 54 0 8 5	10 2 55 10 01 07	9 21 32 9 20 17	8 11 54 8 11 11	5 24 40 5 24 43	2 27 34 2 27 37	0 00 40 0 00 39
24 hrs motion Log of 24 hrs Motion +log of Time interval* **14h 25 min**	1 1 1.3730 0.2213	12 49 0.2724 0.2213	1 48 1.1249 0.2213	01 15 1.2833 0.2213	0 43 1.5249 0.2213	(-) 0 03 2.6812 0.2213	(−) 0 3 2.6812 **0.2213**	(+)0 1 3.1584 0.2213
Total Nearest figure given in Log table	1.5943 1.5902	0.4937 0.4937	**1.3462** 1.3454	1.5046 1.5051	1.7462 1.7434	2.9025 2.8573	2.9025 2.8573	3.3797 3.1584
Taking anti-log we get the motion till time of birth Add position on 14.2.2005	**0°37'** **10** 1 28	7°42' 0 8 5	1° 5' 10 01 07	**0°45'** 09 20 17	0°26' **8** 11 11	(-)0° 2' 5 24 43	(−)0°02' 2 27 37	(+)0°01' 0 00 39
Position at Birth	10ˢ 2° 05'	0ˢ 15° 47'	10ˢ 2° 12'	09ˢ 21°02'	8ᶜ 11° 37'	1ˢ 24° 41'	2ˢ 27° 35'	0ˢ 00° 40'

*The interval for all planets from 5.30 A.M. to 19.55 Hrs = 14.25

CASTING OF HOROSCOPE IV
MODERN METHOD

11.1. Calculation of Planetary Position (Longitudes of Planets) by Using Condensed Ephemeris for the Years 1941 to 2000.

The methodology discussed in this lesson is applicable to the Ephemeris for all the years between 1941 to 2005 where daily position of Moon & Mercury and alternate day position for other Planets Except Rahu have been given. For Rahu position at the First day of each month has been given.

Example 1 : Calculate the longitudes of Planets at 4 : 40 AM (IST) on 21-02-1943

Solution : Students are advised to open Pages 22 and 23 of the condensed Ephemeris for the years 1941-51. On page 22 the Nirayana longitude of Moon at 5:30 AM (IST) has been given for each day for the whole year 1943. On pages 23 to 25 interval of two days position of Planets Saturn, Jupiter, Mars, Sun and Venus and 3rd day position of Mercury also has been given. On page 26, second column of the 2nd table, position of true Rahu has been given for 1 st of each Month. Students may please now open Pages 96-97 and 98. On page 96-97 a table of Proportional logarithms has been given which

is identical to the table used by us for any current years' Ephemeris. On page 98 another Table for proportional log has been given. This has again been divided into two parts. One part deal with all Planets other than Mercury and Moon wh :reas the other part is for Mercury and Moon only. This is due to the fact that for Moon, the 24 hourly (daily) motion is available from the Ephemeris whereas for other planets (2 Days) motion is available. In these tables (Page 98) **Prop** log have been given for each half an hour or 30 minutes interval from 00.00 AM to 12:00 (Midnight). Any time which falls in between any 30 minutes interval, its logrithm is to be worked out by interpolation. This will become clear to students as we proceed with our Example.

In the example under consideration the date given (21.2.1943) falls within the war Time period. Hence any time given is to be reduced by one hour (Refer Para 6.4.2) unless it is stated that the birth time given is after war time correction.

Therefore Given time   = 4:40 AM (IST)

Less one Hour for war time = 1:00

corrected Time   = 3:40 AM (IST)

Date given is 21-2-1943. From Page 22 of the Ephemeris we find that nearby dates are given as 20 and 22 February. This suits us very well as we must select the two reference dates in such a way that our given date & time falls in between the two selected dates. So in our example with reference to Prop log table at page 98, the 20 Feb will refer the column "Given date", 21 February will refer to column "second day" and the 22 February will refer to column "Next given date". As our date of Birth is 21 February, it has a reference to second day. So we have to find the **Prop.** logarithm for 3:40 AM (IST) from the column "Second Day" as follows :

Time	Log
3:30AM	0.3388
4:00 AM	0.3291

Because variation in 30 Mins = (-) 0097

Therefore variation in 10 Min = (-) 0032

Therefore Log of 3:40 AM   = 0.3388 - 0.0032

= 0.3356

This proportionate log of time (3:40 AM) worked out above is applicable for Planets other than Mercury and Rahu. We can now calculate proportionate log of time (3:40 AM) for Mercury also as follows :

Time	Log
3:30 AM	= 0.0378
4:00 AM	= 0.0280

Variation in 30 Minutes   = (-) 0.0098

Therefore variation in 10 Mins= (-) 0.0033

Therefore Log of 3 : 40 A.M. - 0.0378 (-) 0.0033

or   = 0.0345

We can now proceed to calculate the Position of planets as given in the Tabular Form on the page 26 which is self explanatory.

To calculate the position of Rahu proceed as follows :

On   1   -2-1943   (Page   20)   = 4^s 1 ° 54'

On 1-3-1943 (Page 20)   = 4^s 1° 56'

Motion of True Rahu in 28 days. = (+) 2'

Therefore motion in 20 days   = (2÷28)x20

= 1.4'

or say   = T

Therefore Rahu's position on 21-2-1943 (+)

at 5:30 AM $= 4^s \ 1° \ 55'$

Since the movement of Rahu is very slow (2' in 28 days) in the instant case, the position at 3:40 AM may be taken same as at 5:30 AM. For position of Ketu add 6 signs. So longitude of Ketu=$10^s \ 1° \ 55'$

Note : See the next page for the chart. (page 96)

Example 2. Calculate the position on the planets (long. of Planets) at 10-25 P.M. (ZST) on 11-7-75 at Washington D.C..

Solution. As we have Ephemeris which gives planetary longitudes with reference to IST only, we have to convert the time given in ZST to IST. We therefore refer to Page 111 of table of Ascendants where correction for IST from ZST for Washington D.C. has been given as (+) 10h30m

ZST at Washington D.C.	= 10:25 PM on 11-7-75
or	=22:25 Hrs on 11-7-75
Correction for IST	= (+) 10:30 Hrs
Therefore IST	= 32.55 Hrs on 11-7-75
or	=8:55 AM on 12-7-75

Students can now work out the Planetary position for 8:55 AM (IST) on 12-7-75 following the methodology given in Example 1 above.

EXERCISE 11

Question 1 : Calculate the Planetary Position (Longitude of Planets) for the following dates, time & place :

(a) 5:25 AM (IST)	25-10-1961	Delhi
(b) 9:13 PM (LMT)	15-05-1954	Meerut, UP
(c) 1:27 PM (ZST)	23-03-1944	Sidney
(d) 1:27 AM (GMT)	05-07-1972	Tokyo
(e) 3:40 PM (ZST)	09-06-1980	England

Example I

Calculation of longitudes of Planets at 3:40 A.M. (IST) on 21.2.1943 (Refer Page 93)

Position at 5:30 A.M. (IST) on	Sat	Jup (R)	Mars	Sun	Venus	Merc	Moon
22-2-1943	1ˢ12°45'	2ˢ22°38'	8ˢ26°08'	10ˢ9°26'	11ˢ2°36'	—	—
21-2-1943	-	-	-	-	-	9ˢ12°09'	4ˢ16°57'
20-2-1943	1ˢ12°42'	2ˢ22°45'	8ˢ24°39'	10ˢ7°25'	11ˢ0°07'	9ˢ11°03	4ˢ4°44'
Motion in 2 days/24 Hrs.	3'	(-)7'	1°29'	2°01'	2°29'	1°06'	12°13'
Log of Motion (p. 96)	2.6812	2.3133	1.2090	1.0756	0.9852	1.3388	0.2933
Log of 3:40 A.M. (p. 93 ibid)	0.3356	0.3356	0.3356	0.3356	0.3356	0.0345	0.0345
(Calculated earlier)	—	—	—	—	—	—	—
Total	3.0168	2.6489	1.5446	1.4112	1.3208	1.3733	0.3278
Nearest figure in p.96/97	3.1584	2.6812	1.5456	1.4102	1.3195	1.3730	0.3278
Antilog (motion till birth)	0°1'	(-) 0°3'	0°41'	0°56'	1°9'	1°1'	11°17'
Add position on Ref. Date 20.2.1943	1ˢ12°42'	2ˢ22°45'	8ˢ24°39'	10ˢ7°25'	11ˢ0°07'	9ˢ11°03'	4ˢ4°44'
Position at Birth (3:40 A.M. IST on 21.2.1943)	1ˢ12°43'	2ˢ22°42'	8ˢ25°20'	10ˢ8°21'	11ˢ1°16'	9ˢ12°04'	4ˢ16°01'

(96)

CASTING OF HOROSCOPE V
MODERN METHOD

12.1. Calculation of Planetary Position (Longitudes of Planets) by Using Condensed Ephemeris for the Years 1900-1941

The methodology discussed in this lesson is similar to that discussed in chapter 11 with slight modification and is applicable to the condensed ephemeris for the year 1900 to 1941 where daily position of the *"Moon"* at **5:30 PM (IST)**, position of **"Mercury"** at **5:30 PM (IST)** for every sunday and Wednesday, position of the other Planets at 5 : 30 P.M. (IST) for every Sunday and position of *"Mean Rahu "* for 1st day of each month at 5:30 PM has been given. The use of this condensed Ephemeris is explained by an example as follows :

12.2 Example : Calculate the Planetary Position (longitude of Planets) for the Birth particulars given **below** :

Date : 26 May, 1928; **Time** : 10:30 PM (22-30 hrs) (ZST); **Place** : New York City (USA)

Solution :

Step 1 : From Page 111 of tables of Ascendant it may be seen that New York falls in the Eastern Time Zone and the Indian Standard Time is 10½ hrs advance of the normal standard Time of the Zone. However as the date is 26 May the date falls in the period when summer Time or Day light saving is

in vogue and during which period clocks are advanced by one hour. Hence the recorded time during this period is to be reduced by 1 hr to get the correct zonal standard time of Birth (ZST).

Therefore correct ZST of Birth=9:30 PM (21-30 hrs.)

Step 2 : Convert the corrected ZST of Birth to IST by applying the correction given on Page 111 of tables of Ascendants for New York which is =(+) $10^{hrs} : 30^{mts}$.

Therefore corrected ZST of Birth

$$= 21^{hrs}\ 30^{mts}\ \text{on } 26\text{-}05\text{-}1928$$

IST from ZST $= 21^{hrs}\text{-}30^{mts}\ (+)\ 10^{hrs}\text{:}30^{mts}$

Therefore IST of Birth $= 32$ hrs on $26\text{-}05\text{-}1928$

or $= 08\text{:}00$ AM on $27\text{-}5\text{-}1928$

As such for the purpose of calculating the longitudes of Planets (Planetary position) for the given Birth particulars the time of Birth will be taken as **8:00 AM (IST)** on 27-5-1928.

Step 3 : First of all we will work out the position of Moon as daily positions are available for Moon. The Planetary Position for 1928 AD have been given on page 58-59 of the Ephemeris. However the Nirayana longitudes of Moon for 5:30 PM every day are given starting from every Sunday. Hence 27 May 1928 was a Sunday. As such our time 08:00 AM (IST) is on Sunday. Since position of Moon is daily for 5:30 PM (IST) we can take the reference positions on Saturday and Sunday so that our Time 08:00 AM (IST) falls (26-5-28) between 5:30 PM on Saturday & 5:30 PM on Sunday.

Position of Moon at 5:30 PM

On Sunday 27-5-1928 $=\ 4_s\ 26°\ 04'$

On Saturday 26-5-1928 $=\ \underline{4_s\ 13°\ 30'}$

Therefore Motion in 24 hours $=\ \ \ \ 12°\ 34'$

Time interval from 5:30 PM on Saturday (26-5-1928) to 08:00 AM on Sunday (27-5-1928) = 14 h 30 mins.

Now using the Prop logarithm table at P-118 and 119 of the ephemeris we get:

Log of Motion in 24 hrs. i.e. log of 12° 34'

	= 0.2810
Log of Time Interval 14h30m	= 0.2188
Total	= 0.4998
Nearest Figure in log table	= 0.4994
Anti log of 0.4994	= 7° 36'

Add this to the position of Moon at 5:30 PM on Saturday the 26-5-1928, we get the position of Moon at Birth

$$= 4^S \ 13° \ 30' + 7° \ 36'$$

or $$= 4^S \ 21° \ 06'$$

Step 4 : Next we work out the position of Mercury. On Page 58 the position of Mercury has been given for 5:30 PM (IST) for Wednesday the 23-5-1928 and the following Sunday i.e. 27-5-1928. As our date and time falls in between these two dates, these dates will meet our requirement. So let us note down the required motion of i.e., 23-5-28 at 5:30 PM to 27-5-28 upto 8:00 AM (3 days-14^h-30^m).

Position of Mercury at 5:30 PM (IST)

On 23-5-1928	$= 1^S \ 29° \ 25'$
On 27-5-1928	$= 2^S \ 5° \ 15'$
motion in 4 days	$= 5° \ 50' = (5 \times 60) + 50 = 350'$
Therefore motion in	
3 days + 14^h 30^m	$= 350 \times 86.5 \ hrs \div 96$
or say	$= 315'$ or 5° 15'

Adding this to the Position on 23-5-1928

we get the position on 27-5-1928 $= 2_s \ 4° \ 40'$

Important Note : The position of Mercury worked out by us for 27-5-1928 does not agree with the position shown in the Ephemeris which is 2ˢ 5° 15' since it is for 5:30 PM. This is due to the fact that no Planet keeps a uniform rate of motion. We have therefore found the position of Mercury on two consecutive Sundays in order to use the prop logarithm table given on page 120 of the Ephemeris which is from Sunday to next Sunday. Students will appreciate that had we taken the position of mercury for 27-5-1928 for use of table at page 120, the final position being calculated by us would have become incorrect and the purpose of giving the position of Mercury for two days in a week i.e. for every Sunday and Wednesday in the Ephemeris by N.C. Lahiri would have been defeated. In case Wednesday position was not given in the Ephemeris, we have no option but to take the position for 20-5-1928 and 27-5-1928 only. The idea behind all this is to make use of the data given to work out the longitude as correct as possible.

Step 5 : Now we can proceed to calculate the position of Planets as given in the Tabular form on page 101 which is self explanatory.

EXERCISE 12

Question 1. Work out the Planetary positions (long of Planets) for the following birth dates :

Date	Time	Place
(a) 25-10-1918	5:25 AM (IST)	Delhi
(b) 15-5-1921	9:13 PM (LMT)	Meerut (UP) India
(c) 23-3-1940	1:27 PM (ZST)	Sidney
(d) 5-7-1911	1:27 AM (GMT)	Tokyo
(e) 9-6-1901	3:40 PM (ZST)	England

Position at 5:30 P.M.	Sat (R)	Jup	Mars	Sun	Ven	Merc	Mean Rahu*
27-5-1928 20-5-1928	$7^S23°45'$ $7^S24°14'$	$0^S5°32'$ $0^S4°01'$	$11^S15°09'$ $11^S9°53'$	$1^S13°05'$ $1^S6°21'$	$1^S3°32'$ $0^S24°57'$	$2^S5°15'$ $1^S24°29'$	Refer page 59 of the Ephemeris at the bottom Position at 5: 30P.M.
Motion in 7 days	(-)0°29'	1°31'	5°16'	6°44 '	8°35'	10°46'	1-5-1928 = $1^S18°22'$
Log of Motion in 7 days (page 118, 119) Log of 8.00 A.M. (IST) on Sunday (Page 120)	1.6960 0.0253	1.1993 0.0253	0.6587 0.0253	0.5520 0.0253	0.4466 0.0253	0.3481 0.0253	1-6-1928 = $1^S16°43'$ Motion in 3 1 days = 1°39' = 99' 26 days = 1°23' = 83'
Total	1.7213	1.2246	0.6840	0.5773	0.4719	0.3734	
Nearest Figure (P. 118, 119) Antilog	1.7270 (-)0°27'	1.2239 1°26'	0.6841 4°58'	0.5774 6°21'	0.4717 8°6'	0.3737 10°9'	Position at 5 30 P.M. (IST) on 26-5-1 928 = $1^S16°59'$

Add Position on 20.5.1928
By adding we get the Position at Birth
	$7^S24°14'$
	$7^S23°47'$
		$0^S4°01'$
		$0^S5°27'$
			$11^S09°53'$
			$11^S14°51'$
				$1^S6°21'$
				$1^S12°42'$
					$0^S24°57$
					$1^S3°03'$
						$1^S24°29'$
						$2^S4°38'$
							Motion in 24 Hrs = 3'
							Motion in 14 Hrs 30 Min.
							      = 3÷24 x 14.5
							      = 1.81 ≈ 2'
							Position of Rahu at Birth
							      = $1^S16°57'$
							      - ($1^S16°59'$ - 2')
							Position of Ketu at Birth
							      = $7^S16°57'$

* As calculated and not given in the Ephemeris.

(R) mean Retrograde i.e. the Planet appears to be moving backward. Hence "motion for the moment" is deducted

CASTING OF HOROSCOPE VI
MODERN METHOD

13.1 Students by now would have acquired sufficient proficiency in working out the lagna or the Ascendent or the sign Rising on the Eastern Horizon of Place at the given Epoch, irrespective of the place falling either in the Northern or Southern hemisphere of the world/earth. Similarly the students would have by now practiced and acquired adequate know-how in calculating the Planetary positions (longitudes of Planets in the Zodiac) at the given moment of birth or any other epoch irrespective of the fact to which year, part or country of the world it pertains to. We have dealt with the above subjects exhaustively in the 5 (Five) chapters preceding this chapter. The casting of horoscope or preparation of a map/chart of heavens at the time of Birth of a native is complete after the above details are worked out. However, the Hindus have yet another Astrological tool/Equipment in addition to transit or Gochara, which is Novel in its own way and is unique to "*Hindus*", without which it will be difficult to time the event to any accuracy. This is known as Dasha system and one cannot remain but marvel the wisdom of our ancient Sages, Saints, Maharishis who were the past masters of this divine science called Astrology.

13.2 Mahirishi Parashar in his *Brihat Parashara Hora Shastram* has narrated about 40 types of different dasha systems. However, the Pride of the place has been given to the " *Vimshottari Dasha System* ". The casting of horoscope is not treated as complete unless it is supported by a proper Dasha System. We therefore propose to acquaint our students with the Vimshottari Dasha system through this lesson. As regards other Dasha systems, those are beyond the scope & purview of the Jyotish Praveen course and as the students advance in their study of Astrology they will come to know and learn some of these Dasha systems also in due course of time.

13.3 Vimshottari Dasha System

This is one of the many Dasha systems given to us by our sages for correct divination and timing of events of a nativity. In Vimshottari Dasha system the full span of life of a person is considered to be 120 yrs. Each of the nine planets with which we are concerned in the study of Hindu Astrology has been allotted certain years to make up the total as 120 years. Students will recall that while discussing the subject of Nakshatra vide para 3.8 Supra, we had indicated the No. of Years allotted to each Planet in the Vimshottari Dasha system. We reproduce these below for easy reference of the **students :**

1. KETU	7 Years	6. RAHU	18 Years
2. VENUS	20 Years	7. JUPITER	16 Years
3. SUN	6 Years	8. SATURN	19 Years
4. MOON	10 Years	9. MERCURY	17 Years
5. MARS	7 Years	TOTAL	120 Years

Students will do well to remember the *order* and the *term* allotted to each planet in Vimshottari Dasha Systems as mentioned above.

13.4 Janma Rashi

Each of the twelve signs of the Zodiac is known as Rashi. However in Hindu Astrology the term *Rashi* has a different meaning also. The Rashi/or sign occupied by the Moon at the time of birth of a native is known as his Janma Rashi or simply as *Rashi*. If someone says that my rashi is *Leo*, it means that at the time of his birth the Moon was in Leo Rashi.

13. 5 Janma Nakshatra

Similar to Janma Rashi, we have another concept known as Janma Nakshatra. At the time of birth of a native, the Moon must occupy one or the other of the 27 Nakshatras. The Nakshatra so occupied by the Moon at the time of a birth of the native is known as his **Birth-star, Birth-Constellation** or the **Janma Nakshatra.** If some one says that his Birth star is Poorva Phalguni it means that at time of his birth, the Moon was transiting through the asterism of Poorva Phalguni.

13.6 The Basis of Vimshottari Dasha System

The basis of Vimshottari Dasha System is the Birth star of the Native. Students will recall that each Planet has been given the lordship over 3 stars. Therefore the nine Planets have lordship over the 27 stars/Nakshatras (refer para 3.8 Supra) Accordingly the planet who has the lordship over the Janma Nakshatra of the native will have the *First term* or the *First Period* in the Vimshottari Dasha system for that native. The other lords (planets) will follow one after the other in the cyclic order mentioned in Para 13.3 above.

13.7 Calculation of Vimshottari Dasha Balance at Birth of a native.

Students are aware that each Nakshatra extends to 13°20' of the arc of the zodiac. These 13°20' (or 13 x 60 + 20=800') are equated to the number of years allotted to the Nakshatra

Lord. As such depending on the longitude of Moon at birth, we can work out the degrees or minutes of arc of zodiac yet to be covered by the Moon in that star. Equating the full extent of a star i.e. 800' of arc to the full term of span (period) granted to the lord of Nakshatra in the Vimshottari Dasha, we can work out by simple rule of 3, the balance period equal to the balance of star yet to be covered by the Moon. These calculations can be best understood with the help of a practical example.

13.8. *Example.:* In the example I of Para 10.3 we worked out the longitude of the Moon as 3^S-$9°$-$8'$. From the table given in the Para 3.8 (Sl. No. 8) we know that the Moon is in Pushya Nakshatra which extends from Karka $3°20'$ to Karka $16°40'$. Since at the time of birth of native the Moon had already covered $9°$-$8'$ (-) $3°20'$ =$5°$-$48'$ or 348' of the total 800' of Pushya Star, the balance of Pushya star yet to be covered by the Moon will work out to   800'-348'=452'

Dasha Period of 800' of Pushya Star
whose Lord Saturn is   = 19 Yrs.

So 452' of Pushya will be $= \dfrac{452 \times 19}{800}$

= 10 Yrs 8 Months 24 Days 14 Hrs 24 Min.

As the lord of birth star Pushya is Saturn, the first period of Vimshottari Dasha will be that of the Saturn. Hence we say:

Vimshottari Dasha balance at Birth is that of Saturn = 10 Yrs 8 Months 24 Days 14 Hrs. 24 Min or Say = 10 Yrs 8 Months 25 Days.

Alternatively :

We can work out the Dasha balance with the help of Tables given at Page 116 and 117 of Lahiri Indian Ephemeris for the year 2011 as follows :

Longitude of Moon at Birth = Karkata 9°-8' under column 5 on page 114 and against 9° the following Dasha Balance has been given:

Long.	*of*	*Moon*	*Balance of Saturn*
9°			$10^y 11^m 3^d$ (A)

The long of Moon at Birth is 9°-8' which is more by 8' from 9°. We also know that as the longitude of Moon increases, the balance of Nakshatra to be traversed by the Moon will decrease and consequently the Dasha Balance will decrease. We can therefore deduct the Proportional part for 8' from (A).

From the table of Proportional part for Dashas given at the bottom of Page 117 of the ephemeries for 2011 under column (9) of Saturn, we get the Proportional parts as under:

For 8'   = 2months 8 days (B)

Now deducting (B) from (A) we get

$$= 10^y 11^m 3^d - 2^m 8^d$$
$$= 10^y 8^m 25^d$$

EXERCISE 13

Questions : Work out the Vimshottari Dasha balance at Birth in respect of :

(a) 5 cases in exercise 12

(b) 5 cases in exercise 11

(c) 4 cases in exercise 10

CHAPTER 14

CASTING OF HOROSCOPE VII
MODERN METHOD

14.1 Major **and** Sub Periods of Vimshottari Dasha System

Students have seen that the dasha of planets run into several years ranging from 6 years for Sun to 20 years for Venus. With the periods running to as long as 20 years, it will not be possible to give the precise timing of an event. It is of no use to tell the father of a daughter of marrigeable age that from the next month your daughter is to run the dasha of Venus so in that dasha she will get married as Venus is the karaka for marriage. As Venus dasha has to run for 20 years, the daughter of the consulter will definitely get married during these 20 long years if the marriage is promised in the horoscope. Therefore in order to time the events more precisely our sages have divided these dashas-mahadashas (called as Major period) into antardashas (Sub period), pratyantar dashas (Sub-Sub periods) sookshma dashas (Sub-Sub-Sub period) and Prana Dashas (Sub-Sub-Sub-Sub periods)

14.2 Antar Dashas or Sub-Periods

In the mahadasha (Major period), of each planet, all the nine planets will have their antardashas (sub periods). The

first antardasha period belongs to the same planet whose mahadasha is divided into antardasha. For example in the mahadasha of Sun, the 1st antardasha will belong to Sun and the subsequent antardashas will follow the same cycle order of dasha system given in Para 13.3 Supra. The period allotted to the lord of each antardasha will be in the same proportion as the antardasha lord has been allotted in the Vimshottari Dasha system of 120 years, say for example we want to know how much will be the antardasha of Moon in the mahadasha of Venus, we can find it out by the following method:

In 120 years system Moon has 10 years
so in 20 years (Venus) period it will have

$$= \frac{10}{120} \times 20 \text{ years}$$

$$= 1.667 \text{ years}$$

or $= 1$ year 8 months

By following the above simple mathematical calculation, we can calculate all the nine antardasha of any mahadasha. However a ready made table of these antardashas and pratyantar dasas for all the nine mahadashas is available at page 115 to 124 of Lahiri's Indian Ephemeris for 2011 which may be used by the students with advantage.

14.3 The same principle as discussed in para 14.2 above is applicable to the pratyantar dashas (Sub-Sub periods) under any antardasha. Similarly, we may work out all the sookshma dashas (Sub-Sub-Sub periods) under any pratyantar dasha and also prana dashas (Sub-Sub-Sub-Sub periods) under any sookshma dashas. This way the time periods is reduced to few hours and minutes only for attempting accurate and precise timing of events by experienced and learned Astrologers.

However for the purpose of this course, working out the mahadasha and antardashas i.e. Major period and Sub-periods only will suffice as further minute divisions are beyond the scope of this course.

14.4 How to work out present Mahadasha and Antardasha operating on a native

Suppose a native is born with a dasha balance of Mars as 3 years-8 months-12 days and his date of birth is 14-3-2002. His present dasha can be calculated as under :

Mars Dasha already passed   = 7 Yrs (-) 3^Y 8^M 12^D
                            = 3^Y 03^M 18^D

From the table given at page 115 of Lahiri Ephemeris for 2011, we see that the sub-period of Saturn in Major Period of Mars ends after 3 years 6 months. Hence balance of Saturn sub period at Birth   = 3 years 6 months (-) 3 y 3m 18 days
                            = 0 yrs 2 months 12 days

We can now proceed as follows :

		Y	M	D
Date of Birth of native	=	2002	03	-14
In Mars Dasha, Balance of Saturn	=	0	02	12
∴ Antar Dasha of Saturn				
(Mars/Sat) ends	=	2002	05	26
Antardasha of Mercury	=	0	11	27
End of Mars/Merc	=	2003	05	23
Antardasha of Ketu		0	04	27
End of Mars/Ketu	=	2003	10	20
Antardasha of Venus	=	1	02	00
End of Mars/Ven	=	2004	12	20
Antardasha of Sun	=	0	04	06

End	of	Mars/Sun	=	2005-04-26
Antardasha	of	Moon	=	0-07-00
End	of	Mars/Moon	=	2005-11 -26

So we can say the native was running antar dasha of Saturn in Mars upto 26th May, 2002, thereafter Mercury upto 23rd May, 2003, Ketu upto 20-10-2003, Venus upto 20-12-2004, Sun upto 26-4-2005 & lastly antara of Moon upto 26-11-2005.

As the Antardasha of Moon in Dasha of Mars is last, with the end of Mars/Moon, the Mars Dasha itself will be over. The next dasha (major period) i.e. of Rahu will start w.e.f.26.11.2005.

EXERCISE 14

Question : Please work out the present Dasha and Antar Dasha running in the case of following :

(a) All the 10 cases mentioned at serial (a) and (b) of exercise 13.

CASTING OF HOROSCOPE VIII

TRADITIONAL METHOD

15.1 Traditional Method

In the previous chapters (from 8 to 14) we have seen and discussed the modern method of casting the horoscope. The casting of horoscope mainly involves calculation of the Lagna or Ascendant at the given moment, calculation of planetary positions (longitudes of the planets at the moment of birth) and working out the Vimshottari dasha for the native. We will now deal with these three aspects of casting the horoscope by traditional method. However, now a days with the advent of Modern Ephemeris, Table of Ascendants, Universal Tables of houses, calculators, computers etc., the traditional method appears to have lost its glory primarily owing to non-availability of standard *Panchangas* or *Almanacs*. The basis of calculation of graha-spashta (planetary position) and dasha balance, etc. is the *Panchanga* only in the traditional system of casting the horoscope. It will not be out of place to say that even to some extent the accuracy of the lagna calculated depends on the *Panchanga* from where the longitude of the Sun at the time of Sunrise on the day of birth of a native is taken. We therefore don't propose to deal with the subject in an elaborate way and will discuss it more from the academic

point of view rather than from the angle of its practical application.

15.2 We have already stated in earlier chapters that a Hindu day begins with the sunrise and ends with the next sunrise. The duration of the Hindu day is taken as **60 Ghatis, the '0' Ghati starting at the time of sunrise at that place.** Accordingly measurement of time starts from time of sunrise i.e. "0" ghatis. The interval from the time of Sunrise to the time of birth is called *Ishtakaal*. This *Ishtakaal* is very important factor in casting the horoscope by traditional method. All calculations viz. Lagna, Graha spashta, Dasha etc. are based on this *Ishtakaal* only.

15.3 Rashimaan

Students will recall that we had earlier also discussed the term Rashimaan vide Para 2.13. The Rashimaan is also known as the time of oblique Ascensions. As discussed earlier this is the duration of time taken by each of the twelve signs of zodiac to rise through its 30° on the eastern horizon of a place. The Rashimaans differ from Rashi to Rashi as well as from latitude to latitude. The Rashimaan is computed in Sayana system i.e. to say it is computed for the signs of Sayana or moveable zodiac. The unit of measurement of Rashimaan is Asu where 1 Asu is equal to 4 seconds or 6 Asus is equal to 24 seconds or 1 Pal (Vighati). The rising periods of Sayana Rashis at equator are as follows :

				Asus	Vighati	Hours
Aries	Virgo	Libra	Pisces	1674	279	1hr 51m 36 sec
Taurus	Leo	Scorpio	Aquarius	1795	299.17 or 299	1hr 59m 40 sec
Gemini	Cancer	Sagittarius	Capricorn	1931	321.83 or 322	2hr 8m 44 sec

In order to calculate the time of oblique Ascension or Rashimaan on other latitudes, the Ascensional differences or charkhandas are added to/substracted from the Rashi Maan for the equator. The table for these charkhandas have been given by Dr.B.V. Raman in his book *A manual of Hindu Astrology* at page 161 (Table 1). For places in Northern Hemisphere, these charkhandas are deducted from Rashimaan at equator for Aries to Gemini and Capricorn to Pisces and added for Cancer to Sagittarius. This addition and substraction is reversed in case of places situated in the southern latitudes. Thus with the help of table of charkhandas, we can calculate the Rashimaan for any place on earth. For example we will workout the Rashimaan for Delhi. The charkhandas for Delhi (latitude 28° 39'N) (rounded off to nearest whole Pal) are as follows : 65, 52, 22.

Rashi	Rashi Maan at Equator (Pal)	Charkhandas for Delhi (Pal)	Rashi Maan at Delhi (Pal)	Rashi Maan at Delhi Ghati	Pal
Aries	279	-65	= 214	3	34
Taurus	299	-52	= 247	4	07
Gemini	322	-22	= 300	5	00
Cancer	322	+ 22	= 344	5	44
Leo	299	+ 52	= 351	5	51
Virgo	279	+ 65	= 344	5	44
Libra	279	+ 65	= 344	5	44
Scorpio	299	+ 52	= 351	5	51
Sagittari	322	+ 22	= 344	5	44
Capricorn	322	-22	= 300	5	00
Aquarius	299	-52	= 247	4	07
Pisces	279	-65	= 214	3	34
Total			3600 Pal	60 Ghati	00 Pal

15.4 Calculation of Lagna at Delhi

Let us calculate Lagna for a native born at Delhi on 25-3-2010 at 11a.m. (IST)

Solution : Note the Time of Sunrise = 6:24 a.m.

(page 55 of V.V. Panchaynga)

Time   of   Birth   =11:00 a.m.

Therefore Ishta Kaal   =11:00 (-)6:24

(Diff. between sunrise and Birth time)

= 4 Hrs. 36 Min.

Converting it into Ghati-Pal

we get the Ishtakaal as :   11 Ghati 3 0 Pal (A)

Nirayana longitude of Sun at time of

Sunrise (page 42 of V.V. Panchanga) = 1 1^{s}10°13'57"

Add Ayanamsha   = + 24° 00' 14"

Therefore Sayana Sun   = 12^{s}4° 14' 11"

Or   =   0^{s}4° 14'

It means at '0' Ghati 4°14' of Aries (Mesha) had already passed and (30°(-)4°-14') *i.e.,* 25°-46' (or 25.7°) were yet to pass :

If 30° of Aries take   =2 1 4 Pal

(See Table of Rashi Maan at page 105 ibid)

Then 25.7° will take = (214/30) x 25.7 Pal

= 183 pal or 3 ghati 3 Pal

or 3 Ghati 03 pal.

Therefore Aries period balance

= 3 Gh 03 Pal

Taurus period   = 4 Gh 07 Pal

Total   = 7 Gh 10 Pal

Gemini period   = 5 Gh 00 Pal

Total   = 12 Gh 00 Pal

It means at the time of birth of native sayana Gemini was rising and

(Ishta Kaal-Upto Taurus Period) *i.e.,* A © B

11 Gh 30 Pal (-) 7 Gh 10 Pal = 4 Gh/20 Pal (or 260 Pal) of Sayana Gemini had passed.

Now 300 Pal of Gemini = 30°

So 260 Pal of Gemini   = (30/300) x 260

                            = 26°

Therefore Sayan Lagna was = 2ˢ26°

Less Ayanamsha   = (-) 24°0'14"

Nirayana Lagna   = 2ₛ 1° 59' 46"

or Lagna   = Gemini 1° 59'

15.5 Calculation of Planetary Position

(A) Moon : (From Panchanga for Delhi using *Vishwa Vijay Panchang* of Pt. Hardeo Sharma published from Solan, Himachal Pradesh for the year 2010–2011)

Entered Cancer (Karaka) 29^h-03^m on 24-3-2010 (Wednesday) or at 05-03 Hrs. (IST) on 25ₜₕ March, 2010 (Thursday)

Entered Leo (Simha) at 6-43 Hrs on 27th March, 2010 (Saturday).

Time taken to transit through Cancer (Karaka).

≈ 24^h:00^m

(-) 5^h-03^m

= 18^h-57^m +24^h +06^h-43^m = 49^h-40^m

        (25-3-2010)   (26-3-2010)   (27-3-2010)

Time Interval from

05.03 of 25-3-2010 to 25-03-2010 at 11:00 = 5^h-57^m

In 49^h40^m moon transits $30°$ of Cancer (Karka)

so in 5^h57^m it will transit

$$= \frac{30°}{49^h40^m} \times 05^h\text{-}57^m$$

$$= 30° \times \frac{357'}{2980'} = 3°\ 35'\ 38''$$

Therefore longitude of Moon at birth

$$= \text{Cancer (Karka) } 3°\ 35'\ 38''$$

Hence, Janma Nakshatra is 'Pushya'.

(B) For other Planets : The methodology is the same as for Moon. However in the case of planets, their transit through Nakshatra or even Nakshatra charan (or Pada, Quarter) particularly in case of slow moving planets like Rahu, Ketu, Saturn and Jupiter is taken into account and not the transit of Rashi as the planets will take too much time to transit through one Rashi.

15.6 Calculation of Dasha Balance

This is worked out based on the Nakshatra already transited by Moon and yet to be transited. From the Panchang for Delhi we note the following data for the aforesaid example:

On 25-3-2010 Pushya commenced at $10^{gh}\text{-}43^p$

On 26-3-2010 Pushya was upto $6^g\text{-}16^p$

Hence, duration of Moon in Pushya Nakshatra

$$= 60^g - (10^g - 43^p) + (6^g\ 16^p)$$

$$= 49^g\ 17^p + 6^g\ 16^p$$

$$= 55^g\ 33^p \text{ (Since average span of each Nakshatra is}$$
60 ghatis)

The time of birth of the native was at $11^g\text{-}30^m$. Hence $(11^g\text{-}30^p) - (10^g\text{-}43^p) = 0^g\text{-}47^p$ of Pushya Nakshatra was

traversed by moon at the time of birth. The Lord of Pushya Nakshatra is saturn with a dasha period of 19 years. Hence, if the nontraversed portion of moon in Pushya would be $55^g\ 33^p$ then dasha balance would be 19 years. Since 47^p has already been traversed by moon in Pushya the remaining portion yet to be traversed by moon at birth is $(55^g - 33^p) - (0^g - 47^p) = 54^g - 46^p$

Balance of Dasha would be $19 \times 3286 \div 3333$

$$= 18^y - 8^m - 23^d$$

EXERCISE 15

Question 1 : Cast a Nirayan horoscope and find out the dasha balance at birth by traditional method for a native born at Delhi on 25 October, 2011 at 9:30 AM (IST)

Question 2 : Cast a Nirayana horoscope and find out the dasha balance at birth by traditional method for a native born at New York city (USA) at 10:30 P.M. (recorded Zonal Standard Time) on 22 May, 2011.

CHAPTER 16

BHAVAS

16.1. Students are aware that the **Zodiac** consists of 360°. Though it is oval/elliptical in shape we **consider it to be a circle for all practical** purposes and use in calculations as far as Astrology is concerned. The Zodiac is divided into twelve equal parts of 30° each and each part is known as a Sign/Rashi. **All these twelve signs appear to be rising one after the other on the eastern horizon of any place, gradually due to the rotation of the Earth on its axis from West to East. The particular point of the Zodiac (Ecliptic) which is intersected by the Eastern horizon of a place at a given moment becomes the Lagna or the Ascendant** and this point (Lagna or the Ascendant) marks the beginning of the horoscope for that moment. The Horoscope which is a map of heavens at the given moment has twleve houses and **as twelve houses are the parts of the Zodiac** itself, the sum total of the extension of these houses is again 360°. However, the extension of each individual house is not necessarily 30°. The twelve divisions of the Zodiac taking the Lagna as the point of reference, are known as Bhavas in the Hindu Astrology or Houses in the Western Astrology.

16.2 As we have already said that the twelve divisions of the Zodiac known as Bhavas or Houses are not necessarily

equal, it is essential to work out the extension of each house to know precisely in which house a particular planet is posted or falls in the horoscope prepared for a moment. For working out or calculating the extension of a house, it is necessary to decide first as to which point is the starting point of a house and which point is the end point of that house. We have already calculated one most important point on the Zodiac which is called Lagna. We have also defined vide Para 3.10 Supra, the Tenth house or MC as the point of the intersection of the Ecliptic with the meridian of the place at the given moment. But the mute question remains whether these points are the starting points or the middle points of the houses they represent viz. the First House and the tenth House. As already stated there is a controversy over the issue. According to Western system of Astrology, these points are taken as the starting or beginning points whereas according to Hindu Astrology, these points are the middle points or the *"Bhava Madhyas* " of the houses 1st and 10th. Maharishi Parashara in his Brihat Parashara Hora Shastram has favoured and advocated the later view. In these lessons, we therefore follow the later view.

16.3 Yet another controversy exists in the matter of house divisions. According to one school of thought, all the houses are of *equal extension* and therefore, there is no necessity to calculate the longitude of the 10th cusp (Bhava Madhya or the middle point of the tenth house) separately as was done for the Ascendant. According to the equal house division system, the longitudes of the 10th cusp will not be the same as that of the M.C. Another school of thought advocates the *unequal extension* of houses (Bhavas) and there are several methods to calculate the longitudes of the cusps of the houses other than the 1 st and the 10th. However in all the methods of unequal house divisions, the 10th cusp is the same as the M.C.

In the lesson we do not propose to discuss all the methods of unequal divisions of houses but restrict our discussion only to the one most commonly used by the Hindu Astrologers and is supported by the classical texts on the subject. Students who desire to study the subject in detail are advised to refer to the standard works on the subject, particularly related with Astronomy. They may also read Appendix ll (pages 86 to 97) of the Tables of Ascendants by N.C. Lahiri which gives a fuller treatment of the subject.

16.4 In order to work out the extent of different houses, it is essential to work out first the longitude of the 10th cusp in addition to the Lagna. The longitude of the 10th cusp is calculated with the help of Table of Ascendants exactly in the same way as the Lagna. The only difference is that while the longitude of Lagna varies from latitude to latitude, the X cusp longitude is same for all places at a given moment. As such only one table will suffice to calculate the X cusp which has been given at page 8 as well as at page 80 of the Tables of Ascendants and also page 132-133 of Ephemeris for 2011 by N.C. Lahiri. By using the same Sidereal time as for calculating the Ascandant, we can calculate and find out the longitude of the 10th cusp from this table. We will illustrate this with the help of an exāmple.

16.5 Example 1 : Find out the longitude of the 10th Cusp for the native of example 1 of Chapter 6.

Solution : Sidereal Time of Birth as calculated vide Example 1 of Lesson 6. = $11^h\ 23^m\ 27^{sec}$ (Page 56 ilid))

For this Sidereal Time, from Page 8 of Tables of Ascendants or from table at pages 132-133 of the Ephemeris for 2011, the longitude of X cusp is worked out as follows :

For $11^{hrs}\ 23^{min}$ $= 4^s\ 26°\ 56'$

For $11^{hrs}\ 24^{min}$ $= 4^s\ 27°\ 12'$

Diff between 11 h 23 m and 11 h 24 m = 0-16'

For $27^{Sec} = \dfrac{16}{60} \times 27 = 7.2'$ $= 0\quad 0°\quad 7'$

For $11^h\ 23^m\ 27^{sec}$ $= 4^s\ 27°\ 03'$

Ayanamsha correctionfor 2005 = (-) 0°56'

(Since the birth date is 25-10-2005)

Therefore Nirayana longitude of X cusp = $4^s26°7'$

16.6 The point exactly opposite to the 1 st cusp is the VII cusp and similarly the point opposite to the X cusp is the IV cusp. These 4 points on the Zodiac are known as the cardinal points of any horoscope and are therefore given specific names as **follows** :

I cusp is known as *Ascendant* and the X cusp is called *Zenith* VII cusp is known as *Descendant* and the IV Cusp is called *Nadir*

For example under consideration, these can be represented as **follows** :

X
Zenith
4°26°7'

I
Ascendant
7°15°51'

VII
Descendant
1°15°51'

IV
Nadir
10°26°7'
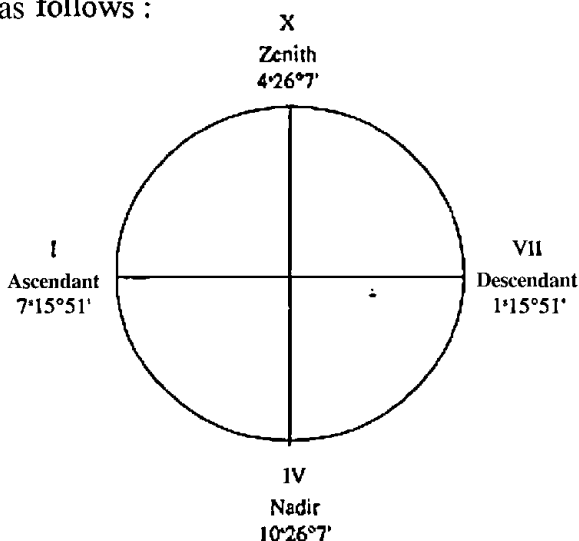
From the figure one can easily see that if the Zodical Arc between the X cusp and the Ascendant (I Cusp) is divided into 3 equal parts, the intervening points will indicate the longitudes of the XI and XII cusps. Similarly the Arc between the Ascendant and the IV cusp when divided into three parts will give us the longitudes of the II and III cusps. Further by adding 6 signs to the longitudes of the XI, XII, II and III cusps, we can find out the longitudes of the opposite cusps namely the V, VI and VIII and IX. Thus we will be able to get the longitudes of all the remaining Eight cusps. This can be done as follows :

Longitude of Ascendant for the Sidereal Time of 1 1^h 23^m 27$_s$ at 28° 39' N **Delhi** 25-10-2005 at 9.30 AM. (Refer to Page No. 48 of Table of Ascendants or Page 140-141 of Indian Ephemeris for 2005)

11^h 24^m	7^S 16° 55'
11^h 20^m	7^S 16° 4'
Moment in 4 m interval	51'
We need moments for 0^h 3^m 27$_s$	43'
Adding this to 11^h 20^m	7^S 16$^{o'}$ 4'
S.T. at epoch 11^h 23^m 27$_s$	7$_s$ 16° 47'
Less Ayanamsa for 2005	(-) 56'
	7^S 15° 51'

Longitude of Ascendant = 7^S 15° 51'

Deduct longitude of X = 4^S 26° 07

Length of Arc X to I   = 2^S 19° 44' (A)

(Note : Students are advised to note that to get the Arc length between the X cusp and the I cusp, we **Must** always substract the longitude of X from the longitude of Asc. (i.e. **I-X**) and Never reverse of it (i.e. **X-I**). In case longitude of X is more than the longitude of the 1 cusp, we may add

12 signs to the longitude of 1 cusp and then do the subsctraction).

Now by dividing (A) by 3 we get

$$\frac{2^s 19° 44'}{3} = \frac{79° 44'}{3} = 26° 34' 40''$$

We can now get the longitudes of the XI and XII cusps as follows :

Longitude of X cusp = 4^s 26° 7'

Add =   26° 34' 40"

Longitude of XI cusp = 5^s 22° 41' 40"

Add =   26° 34' 40"

Longitude of XII cusp = 6^s 19° 16' 20"

Add =   26° 34' 40"

Longitude of Ascendant = 7^s 15 ° 5 1'

Longitude of X cusp = 4^s 26° 7

Longitude of IV cusp = 10^s 26° 7'

Longitude of VII cusp = 1^s 15° 51'

Similarly by substracting the longitude of Ist from the IV, we get = 10^s 26° 7' - 7^s 15° 51' = 3^s 10° 16'

And dividing this by 3 we get = $1^s 3° 25' 20''$........(B)

We can now calculate the longitude of the II and III cusps as follows :

Longitude of Ascendant = 7^s 15 ° 51'

Add = 1^s 3° 25' 20"

Longitude of II cusp = 8^s 19° 16' 20"

Add = 1^s 3° 25' 20"

Longitude of III cusp = 9^s 22° 41' 40"

Add = $1^s 3° 25' 20''$

Longitude of IV cusp = 10^s 26° 07'

We have thus calculated the longitudes of X, XI, XII, I, II and III houses and by adding 6 signs to each of them we can find the longitudes of the remaining 6 houses. This can be represented diagrammatically as follows :

16.7 Students will recall that in Hindu Astrology the cusps are the middle points of the houses or the *Bhava Madhyas* and not the beginning of the Bhavas as followed by the western Astrologers. As such in order to find out the extent of Bhavas we have yet to calculate the longitudes of the starting/end points of Bhavas. It should however be noted that the end point of a particular bhava is the same as the starting point of the next Bhava. Therefore the end point of the I house is the starting point of the II house and the end point of the II
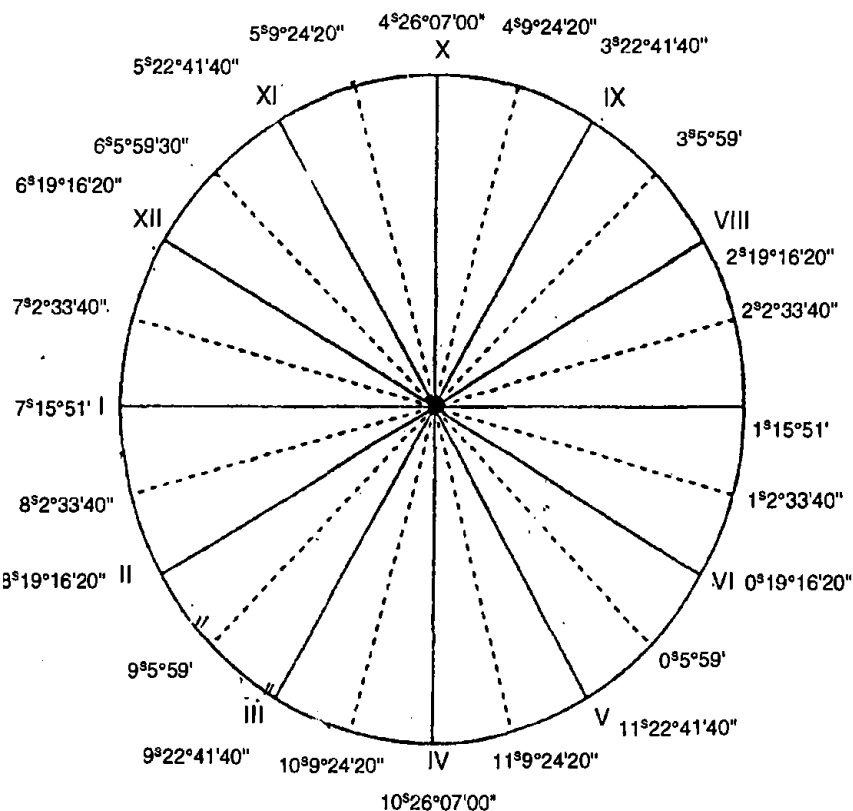
house is the starting point of the III house and so on. In Hindu Astrology, these start/end points are known as *Bhava-Sandhis* or the *Junction points* of the houses. These junction points or the *Bhava Sandhis* have been marked by the dotted lines in the above figure. The length of Arc covered between any two *Bhava Sandhis* will be the extent of the Bhava or the house represented by the Bhava-Madhya or the cusp falling in between the two *Bhava Sandhis*. The longitudes of these Bhava Sandhis can easily be worked out by taking the mean of the longitudes of the two cusps on either side of a Bhava Sandhis or alternatively we can initially divide the lengths of Arcs between the X and I and IV and VII by 6 instead of 3 as done earlier vide Para 16.6 above. This 1/6 of the respective Arc when successively added to the longitudes of the X cusp will give us alternatively the longitudes of the subsequent Bhava-Sandhis and Bhava Madhya, as follows :

Lengths of Arc between X cusp and Ascendant divided by 6.

$$= 2^S 19°44' \div 6 = 13°17'20''$$

Similarly the length of the Arc between Ascendant and the IV cusp divided by 6 will be $= 3^S 10°16' \div 6 = 16°42'40''$

We can now calculate the longitudes of different *Bhava Sandhis* and *Bhava Madhyas* as follows :

Longitude	of	Ascendant		=	$7^S 15°51'00''$
Add				=	$16°42'40''$
Long. of Bhava-Sandhi between I and II				=	$8^S 02°33'40''$
Add				=	$16°42'40''$
Longitude	of	II	cusp	=	$8^S 19°16'20''$

Add				=	16°42*40"
Long. of Bhava Sandhi between II&III				=	9s5°59'00"
Add				=	16°42'40'
Long.	of	III	cusp	=	9s22°41'40"
Add				=	16°42'40"
Long. of Bhava-Sandhi between III & IV				=	10s9°24'20"
Add				=	16°42'40"
Long.	of	IV	cusp	=	10s26°07'00"

Similarly starting from the longitude of the X cusp and adding successively 13°17'20" we can obtain the Bhava-Sandhis between **X and** XI cusps, **XI and** XII cusps **and XII** and I cusp. Then having obtained all the Bhava-Sandhis between X to I and I to IV and by adding 6 signs to those, we can obtain the longitudes of the remaining Sandhis between IV to VII and VII to X cusps. These have been worked out and shown in the figure given on previous page.

16.8 Having worked out the extension of each of the
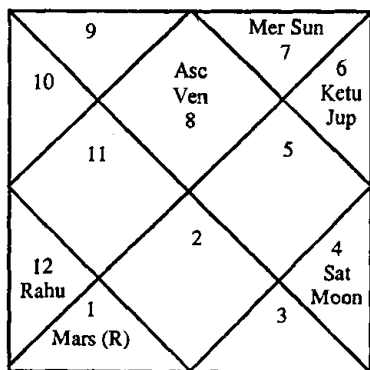
RASHI CHART   BHAVA CHART
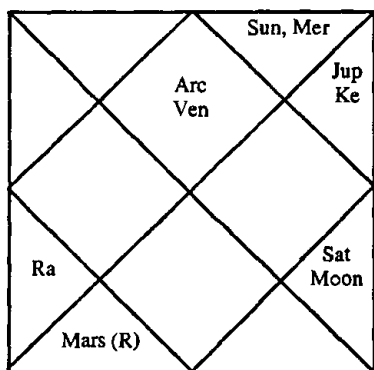
twelve houses as above, we can now mark the position of all the nine planets based on their longitudes (for the example horoscope these have already been calculated vide example 1 (DOB 25-10-2005) at 9.30 a.m. IST chapter 10 in the aforesaid diagram and see for ourselves in which particular Bhava a particular planet is posited. We give below the Rashi chart (commonly known as Janma Kundali or Birth Horoscope) and the Bhava chart for comparison by the students.

A comparison of the above two charts will reveal that Jupiter actually falls in the eleventh (XI) house or Bhava.

16.9 We may however mention here that some Astrologers are of the opinion that Bhava Chart or the Chalit of the planets does not have much significance and judgement of a horoscope with reference to the Rashi Chart alone is sufficient and yields reasonably satisfactory results. We are however neither in favour nor against this view as we prescribe the use of Divisional charts. We therefore leave this to our students to apply the phenomenon to as many practical horoscopes as possible and verify the results themsleves.

EXERCISE 16

Question : Calculate the longitudes of all the Bhava-Sandhis and Bhava Madhyas in respect of horoscopes of natives of all the 5 cases of Question 1 Exercise 11.

CHAPTER **17**

SHADVARGAS

17.1 Students will recall that vide Lesson 13 (Para 13.1) while discussing the subject of dasha systems we have stated that dasha systems propounded by our ancient sages is a marvellous and unique Astrological tool for precise timing of events that are likely to take place in the life of a Native. Similarly the **concept of Divisional Charts or the *Shodasvargas* is yet another instrument, unique to Hindu Astrology, for correct and accurate assessment of worth of an Astrological Nativity.**

17.2 Maharishi Parashara in his *Brihat Parashar Hora Shastram* has mentioned about the different *Vargas* or the *Divisional Charts"* as follows :

*(a) Shad Vargas or the Six charts :*It includes the Lagna, Hora, Drekkana, Navamsa, Dwadashamsha and Trimshamsha.

(b) Sapt Vargas or the seven charts : It includes all the above mentioned six charts or Shadvargas plus Saptamsha.

(c) Dash Vargas or the ten charts : It includes all the above mentioned seven charts plus Dashamsha, Shodashamsha and Shashtyamsha.

(d) Shodas Vargas or the Sixteen charts : It includes all the above mentioned charts plus Turyamsha (or

Chaturthamsha), Vimshamsha, Chatur Vimshamsha, Sapt-Vimshamsha (or Bhamsha) Chatvariamsha (or Khavedamsha) and Panch-Chatvariansha (or Akshavedamsha).

17.3 It is significant to know and understand that each **divisional chart or the varga chart is symbolic of certain aspect of human life. As the name Divisional Charts itself is indicative, a Rashi is divided into as many as 60 divisions and each division envisages a particular aspect of life, whether material, spiritual or physical.** Out of the aforesaid 60 divisions, the 16 divisions as mentioned in Para 17.2 above are specifically considered to be more significant. Apart from affording the Astrologer a ready reckoner to know and assess the strength and/or weakness of the planets in the different vargas (depending on whether the planet is in the varga of exaltation, mooltrikona, own sign, neutral, enemy sign or debilitation etc), it also enables the Astrologer to refer to a divisional chart according to the particular aspect of the life indicated by that divisional chart. The indications/use of each of these 16 charts or Shodasvargas are as follows :

(i) *Lagna chart :* Judgement about body, structure, built, constitution, health, complexion, etc.

(ii) *Hora Chart :* One's wealth, finance, prosperity, poverty, etc.

(iii) *Drekkana:* Relations with brothers and sisters, their influence on the native, as well as their property, etc. also diagnosis of desease.

(iv) *Turyamsa or Chaturthamsha :* Luck or fortune of the native, the assets and liabilities of person whether moveable or immovable, etc.

(v) *Saptamsha* : Children and Grandchildren, their prosperity, etc. According to one school of thought, this chart in a female nativity can be used for assessing the husband's prosperity and well being.

(vi) Navamsha : Strength or weakness of the planets. Wife or Husband and how will be the partner in life, married life, etc.

(vii) Dashamsha : Prosperity and upliftment, one's achievements, honour, professional success in life, etc.

(viii) **Dwadashamsha:** Parents, Parental happiness, etc.

(ix) **Shodashamsha** : Happiness, Miseries, Conveyances, etc.

(x) *Vimshamsha* : Prayer, Worship, Upasana, etc.

(xi) **Chatur-Vimshamsha** : Education knowledge, learning, etc.

(xii) *Sapta Vimshamsha or Bhamsha* : Strength, weakness, etc.

(xiii) *Trimshamsha* : Miseries, danger in life (arishta), etc.

(xiv) *Chatvariamsha or Khavedmsha* : General good/bad, auspicious/inauspicious results that a native may enjoy.

(xv) *Panch-Chatvariamsha or Akshavedamsha,* and

(xvi) **Shashtyamsha** : All other indications, Good or Evil in life, etc.

17.4 Method of Preparation of Divisional Charts

We will like our students to note that Astrology is a subject where far too many different schools of thought are prevalent and therefore for preparation, of divisional charts also, several methods are in vogue. However, in this lesson we propose to discuss only one method which is most commonly used and applied by the **majority** of the Astrologers

of the yore and present times. The methods given in this lessons are the same as given by the Greatest Hindu Astrologer of his time, (Late) Dr. B.V. Raman in his book *A Manual of Hindu Astrology*.

17.4.1 Further it is stated that while we have listed and acquainted our students with all the 16 charts or *shodashvargas,* the method of working out the *Shadvargas* only, is discussed in this lesson, as mentioned in the syllabus for Jyotisha Praveen examination. Those students who desire to work on the remaining 10 charts or vargas are advised to refer to chapter XII of Dr. B.V. Raman's book mentioned above.

17.4.2 LAGNA CHART or RASHI CHART : This is the basic chart or the natal chart erected/cast for the moment of birth of a native or incident or question. As a matter of fact, all the remaining 15 charts are the divisions of this chart only and therefore can be stated to emanate from this chart. We give below this chart for a native born on 25-10-2011 at 09:30 AM (IST) at Delhi.

17.4.3 HORA CHART : Each Rashi is divided into two equal halves and the Sun and the Moon becomes the rulers of these divisions as follows :

NORTH INDIA STYLE

SOUTH INDIA STYLE

(a) In odd signs :

    (i) First 15° are ruled by the Sun (Leo Sign)

    (ii) Last 15° are ruled by the Moon (Cancer Sign)

(b) In Even Signs :

    (i) First 15° are ruled by Moon (Cancer sign)

    (ii) Last 15° are ruled by Sun (Leo sign)

The Hora chart for the above native will therefore be as under:

HORA CHART

Cancer 4	Moon, Merc Venus
5 Leo	Lagna, Sun, Mars Rahu Saturn, Ketu Jup

DREKKANA

17.4.4 Drekkana Chart.

NORTH INDIA STYLE

SOUTH INDIA STYLE

Each Rashi is divided into three equal parts of 10° each. The First Drekkana (0° to 10°) falls in the same Rashi itself, the second Drekkana (>10° to 20°) falls in the 5th Rashi therefrom and the third Drekkana (>20° to 30°) falls in the 9th Rashi from the Rashi under consideration. The Drekkana chart for the example horoscope will be as given above :

17.4.5. Navamsha Chart : In this case each Rashi is divided into 9 equal parts of 3°20' each (i.e. Equal to a quarter or Pada of a Nakshatra)

In Fiery Signs :   The nine parts are ruled by the lords of nine signs from Aries.

In Earthy signs :   The nine parts are ruled by the lords of nine signs from Capricorn.

In A iry Signs : The nine parts are ruled by the lords of nine signs from Libra.

In Watery Signs :   The nine parts are ruled by the lords of nine signs from Cancer.

The Navamsha chart for the horoscope is given below :

NAVAMSHA

17.4.6 Dwadashamsha Chart : Each Rashi is divided into 12 equal parts of 2°30' each. The 12 parts are ruled by

the lords of the 12 signs successively from the sign under consideration.

DWADASHAMSHA
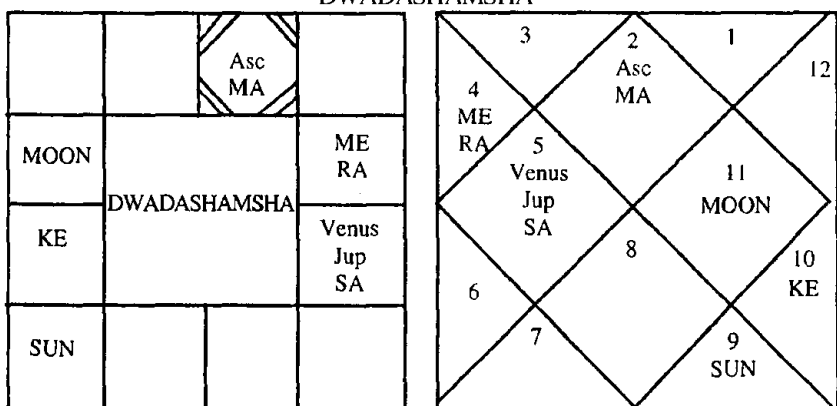
17.4.7 Trimshamsha Chart : Each rashi is divided into 30 equal parts of 1° each.

(a) In Odd Signs :

First 5 parts (0° to 5°) ruled by Mars

Next 5 parts (5° to 10°) ruled by Saturn

Next 8 parts (10° to 18°) ruled by Jupiter

Next 7 parts (18° to 25°) ruled by Mercury

Next 5 parts (25° to 30) ruled by Venus

(b) In Even signs :

First 5 parts (0° to 5°) ruled by Venus

Next 7 parts (5° to 12°) ruled by Mercury

Next 8 parts (12° to 20°) ruled by Jupiter

Next 5 parts (20° to 25°) ruled by Saturn

Next 5 parts (25° to 30°) ruled by Mars.

The Trimshamsha Chart for the example horoscope is given below :

TRIMSHAMSHA

Moon Asc			ME
Sun	TRIMSHAMSHA		
RA KE			
Jup	SA MA	VEN	

```
        1        12      11
                Asc     SUN    KE
   2            MOON            RA
                                10
        3
        ME              9
                        Jup
                                 8
   4         6                   SA
                                 MA
                        7
        5               VEN
```
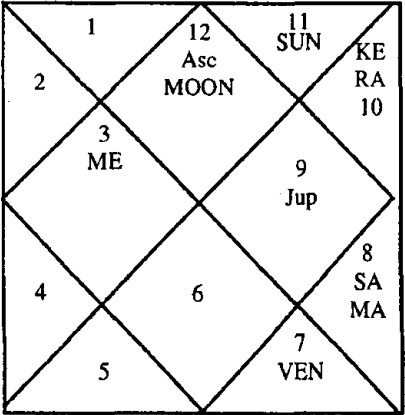
EXERCISE 17

Question : Prepare the Shadvarga charts of all the 5 cases
of Question 1 of Exercise No. 11

CHAPTER 18

REFRESHERS

Question From Jyotisha Praveena Examinations Paper **II**

18.1. Calculate Ascendant and planetary positions of the native born on 10th Dec. 2011 at 11-20 Am at Ahmedabad.

Ans.

		H M S
Step I. & Step II.	Note sidereal Time for 10th December 2011 (Page 38 of Ephemeris) (includes Step I and II)	17-14-36
Step III.	Correction for place of birth (Page 146)	+ 0-0-7
Step IV.	Sid. Time on 10th Angust 2011 at Ahmedabad 12 Noon	(A) 17-14-43
Step V.	**LMT** Time of birth (IST) AM LMT Correction (P-146 Ephemeris 2011) ∴ L.M.T at birth	11-20-00 ⊖ 0-39-36 10-40-24
Step VI.	T.I. from Noon as birth is A.M 12 hrs 0 10-40-24	1-19-36

Step VII. Increase in T.I (Table IV page 33
of this book) for 1 h 19 m =   0-0-13
Total   =   (B) 1-19-49

Step VIII. Being A.M. it is subtracted from (A)

(A-B) (17-14-43)-(1-19-49)

i.e.,   Time   of   epoch   =   15-54-54

Step IX   **Calculating Ascendant**

Sid. Time at epoch is 15^h-54^m-54^s

'Refer page 37 of Table of Ascendants'

$15^h 56^m$	$9^s 27° 10'$
$15^h 52^m$	$9^s 25° 59'$
4^m interval	$1° 11'$
2^m interval	$35' 30''$
1^m interval	$17' 45''$
54^s interval	$15' 58''$

$$\left(\frac{17.75 \times 54}{60}\right)$$

∴ $2^m 54^s$	$51' 28''$
$15^h 52^m$	$9^s 25° 59' \ 0''$
$15^h 54^m 54^s$	$9^s 26° 50' 28''$
Less Ayanamsha for 2011	$1° \ \ r$
Ascendant at Epoch	$9^s 25° 49'$

(Say Capricorn 25° 49')

18.2. Find out the following for above chart

(a) Naramsha chart *(b)* Constellation of each planet and lagna *(c)* Saptamsha chart *(d)* Dasa balance (3) Hora chart.

Planetary Positions on 10th Dec. 2011 at 11-20 Am at Ahmedabad

Details	MOON	MER (R)	VENUS	MARS	JUP (R)	SAT	SUN
(0 11-12-2011	1/28° -59'-40"	7/10°-40'	8/23°-54'	4/19°-24'	0/06°-43'	6/02°-38'	7/24°-32'-52"
(ii) 10-12-2011	1/16°-40'27"	7/11°-20'	8/22°-40'	4/19°-01°	0/06°-47°	6/02°-33'	7/23°-31'-55"
(iii) Diff. of 24 hrs	12ᵈ 19' 13"	(-) 0°-40'	1°-14'	0°-23'	(–)0°-04'	0°-05'	1°-0'-57"
(iv) Diff. of T.I.							
11-20 AM–5-30–5-50 hrs							
(v) Log for Diff 5ʰ 50ᵐ	6143	6143	6143	6143	6143	6143	6143
Log for motion of planets	2897	1.5563	1.2891	1.7966	2.5563	2.4594	1.3730
(vi) Total	9040	2.1706	1.9034	2.4109	3.1706	3.0737	1.9873
(vii) Nearest log for (vi)	3°-0'	0°-10'	0°-18'	0°-05'	0°-01'	0°-01'	0-15'
(vii) Add it to position							
of 10 Dec at 5.30 AM	1/19°40'27"	7/11°10'	8/22°58'	4/19°06'	0/06°46'	6/02°34'	7/23°46'
and get position for							
10-12-2011 at 11.20 AM							

Note: Rahu   11.12.2011   7ˢ 20° 15"

                10.12.2011   7ˢ 20°15'

No change in 24 hours. Hence no need for calculation. **Ketu** therefore would be 1ˢ20° 15'.

CONSTELLATIONS OF PLANETS AND LAGNA

		Constellation	Lord
LAG	9/25-49	Dhanishta 1	MA
SUN	7/23-46	Jyestha 3	MER
MOON	1/19-40-27	Rohini 3	MOON
MARS	4/19-06	P.Phal 2	VEN
ME(R)	7/11-10	Anuradha 3	SAT
JUP (R)	0/06-46	Aswini 3	KETU
VE	8/22-58	P. Asadha 3	VEN
SA	6/02-34	Chitra 3	MARS
RA	7/20-15	Jyestha 2	MER
KE	1/20-15	Rohini 4	MOON

D/1

	11	VEN 9	RA, SUN MER (R)
12	LAG		8
	Jup (R) 10		SA 7
KE 2 MO	1	4	6
	3	5 MA	
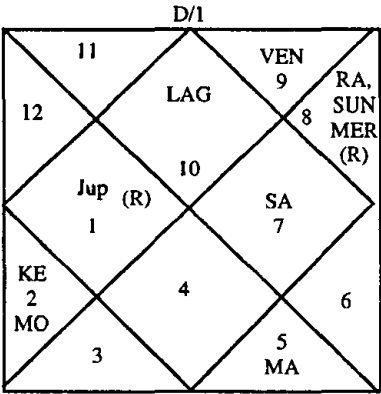
D/2

| (4) VE MA ME |
| (Cancer) |
| HORA |
| (5) LAGNA Jup SA Sun Mo RA KE |
| (Leo) |

D/9

MA 6	5	KE 4	MO
SA ME 7 VE	8	3	Jup
		2	
9	11 Sun		1
10 Rahu		12	

D/7

11			MA 9
Mo 12 KE		10	8
	1	7	Sun SAT
Ve 2 Ju		4 ME	6 RA
	3	5	
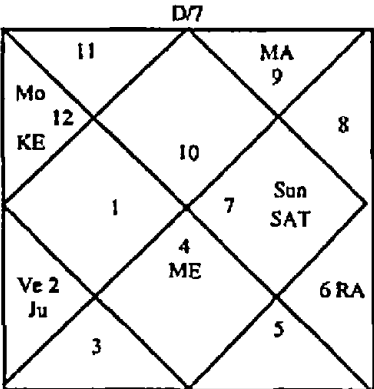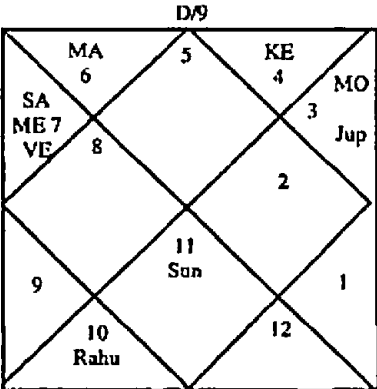
Calculation of balance of Dasha See Page 116-117 of Ephemeris

Moon is 1/19-40-27 (See Table at page 117)

	y m d
At 19°-40' below Taurus = Moon :	2-9-0

Balance of Dasa of moon at birth = 2yrs 9 mths

18.3 (a) If a person is born on poornina, what will be the relative positions of Sun and Moon in the horoscope?

Ans. The Sun and the Moon will be in 1/7 axis, *i.e.,* 180° apart.

(b) If venus is in deep exaltation point in RASI Chart what will be the position in Navamsha.

Ans. Venus will be Vargottam in Navamsha and will also be exalted in Navamsha.

(c) If Saturn is posited in Kritika nakshatra 1ˢᵗ pada what could be the position of Saturn in Hora chart?

Ans. Kritika first pada falls in Aries (Mesha) from 26°40' to 30° *i.e.,* last navamsha of Aries (Mesha) and 2ⁿᵈ Hora (above 15°) hence Saturn will be in the Hora of the Moon.

(d) If Jupiter is debilitated in Rasi and Navamsha, what is Nakshatra of Jupiter?

Ans. Jupiter is debilitated in rasi chart in Capricorn (Makar) at 5°, the nakshatra Uttar Asadha is from 26'-40' of Dhanu (Sagittarius) to 10° of Makar (Capricorn), the Jupiter at 5° falls in Uttar Asadha III pada.

(e) If Moon is posited in Dhanishta 1ˢᵗ pada, then who is the dasa lord and what could be range of balance dasa.

Ans. Dhanishta nakshatra falls from **23°20'** to 30° of Capricorn (Makar) and 0° to **6°-40'** of Aquarius (Kumbha) First pada is from 23°-20' to 26°-40' of Capricorn (Makar)

this means of first pada is 3°-20' i.e., 1/4* of nakshatra is traversed by Moon. Total period of Mars (lord of Dhanishta) dasa is 7 yrs. 1/4th of 7 is 1 yr 9 mths is enjoyed and balance period of dasa will be 7 (-) 1 yr 9 mths = 5 yrs 3 mths is the balance of dasa at birth.

18.4. Answer the following:

(a) Convert the following into hours and sec

   (i) 40 Ghati 23 Pal

   (ii) **32 Ghati 23 Pal**

(b) **Convert the given into Ghati and pal**

   (i) **10 hrs 20 mts.**

   (ii) **17 hrs 15 mts.**

(c) **If the moon is at 300° in a natal chart, what is the Vimshottari dasa balance for the native at the time of birth?**

Ans. *(a)* Multiply by 2 and ÷ 5 we get

   (i) 16 hrs. 9 mts. 12 secs.

   (ii) 12 hrs. 57 mts. 12 secs.

(b) Multiply by 5 and divide by 2

   (i) 25 ghati and 50 Pal

   (ii) 43 ghati-7 pal–30 vipal

(c) One rasi is of 30°, if we divide 300° it will be 10 Rasis apart, *i.e.,* 30° is end of [Mesh, 60° (Vrish) 90° (Mithuna) 120° (Karka) 150° (Simha), 180° is (Kanya) 210° (Tula), 240° Scorpio (Vrishchika), 270° is the end of Sagittarius (Dhanu) and 300° is the end of Capricorn (Makar) the 10th sign of Zodiac. At 300° is the 2nd pada of Dhanishta nakshatra whose lord is Mars. Mars total dasa period is

7 yrs. second pada is over means half of the period availed and half remains *i.e.,* balance 3 yrs 6 months is available (Bhogya dosa) at birth.

18.5. What is the difference between Sidereal Time, Local Time, Standard Time and GMT? Calculate the Sidereal Time for the native born on 11th June 2011 at 7.30 p.m. in Pune.

Ans. Local Time. The local time is known as local mean time for a particular place. the local time or more accurately the local mean time (LMT) which is created by the gradual rising of the Sun and the rounds and rotation of the earth is the real or natural time of a place. This differs from place to place and is dependent on the longitude and latitude of the place. This is important for calculating ascendant (lagna).

Standard Time. Anew version of time was decided upon and was called the standard time to have the uniformity of time, which was the L.M.T. of a centrally located longitude in a country. In case of India, it was in 1906 AD when it was decided that the terrestrial longitude 82° 30' E will be taken as the standard meridian of India **for** this purpose and the LMT at this meridian (82° 30') E longitude will be the Indian Standard Time (IST). By this decision, the watches began to show **a** uniform time through out the country.

GMT (Greenwich Mean Time). As in case of country, the necessity to have a uniform time, generated the concept of 'Standard Time' for a country, in the international affairs, it was also considered necessary to have a standard time which could be referred to by all the countries of the world whenever needed. We all know that the meridian passing through the

Greenwich (near London) has been chosen as the 0° longitude or the reference point for reckoning the terrestrial longitudes of all places on earth. Therefore, the local time at the meridian of Greenwich at any epoch (moment) is known as Greenwich Mean Time (GMT).

Sidereal Time. The Sidereal Time is derived from the earth's rotation with respect to the stars. We discussed that sidereal day is the time taken by the earth to rotate once on its axis with reference to any fixed star, the duration of sidereal day is 23 hrs 56 mts. (appx.) or 23 hrs 56 mts. 4.091 secs. In astronomical terminology, the sidereal time at any instant is defined to be the west hour angle of the Vernal Equinoctial (VE) point or the first point of Sayana Aries (Mesha) from the upper meridian of the place. For mathematical purpose, it will be suffice to define the sidereal time as the local time reckoned according to the apparent rotation of the celestial sphere. Or whenever the time is reckoned with reference to the sidereal day, it is called sidereal time. The sidereal time is 'ZERO' hour when the first point of Aries or Mesha (in Sayana System) *i.e.,* vernal or the spring equinox crosses the observer's meridian (which is the great circle on the celestial sphere, passing through the Zenith and both the celestial poles).

Calculation of sidereal time for the native born on 11th June 2011 at 19-30 hrs in Pune.

Step 1   Note down the sidereal time at 12 hrs (noon) LMT for 82°30' E longitude for 1900 AD for the day and month of the given moment from Table 1 at page 2 of Table of Ascendent

OR

From Ephemeris for 2011 against   5–17–03 11th line in 4th column

Step 2   Correction of year not required
as it has been included in current
ephemeris

Step 3 Correction of the place Pune
(Page 153)
(LAT 18°–31'N Long 73°–53° E)   + 0-0-06
LMT Corr. (-) 34'-28"

Step 4   Sidereal Time for 12 Noon or   5–17–09 (A)
11th June 2011

Step 5 Convert the given time of epoch.
into LMT by applying LMT   07-30-0
correction (Page 153)   (-) 34-28

Step 7   06-55-32

Increase T.I. from table IV

	hrs.	mt.	sec.
	6		59
	0-55		9
Total	1		08	+ 1–08

Corrected Time Interval   6–56–40 (B)

.*. **Sidereal Time at Epoch.**

Add A & B as the time is of afternoon

= 5–17–09 + 6–56–40   12–13–49

SAPTAVARGA CHARTS

Note : 1. Hora; 2. Drckana, 3. **Saptamsha** 4. **Navamsa** 5. **Dwadasamsa** 6. **Trisamsa**

SIGNS	Deg. (°)	2	3	4	5	6	7	8	10	12	12	12	13	15	16	17	17	18	20	21	22	23	25	25	26	27	30
	Mt. (')	30	20	17	0	40	30	34	0	0	30	51	20	0	40	8	30	0	0	25	30	20	0	42	40	30	0
	Sec (")	0	0	9	0	0	0	17	0	0	0	26	0	0	0	34	0	0	0	43	0	0	0	51	0	0	0
ARIES	Hora	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
	Drekana	1	1	1	1	1	1	1	1	5	5	5	5	5	5	5	5	5	5	9	9	9	9	9	9	9	9
	Saptamsa	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7
	Navamsa	1	1	2	2	2	3	3	3	4	4	4	4	5	5	6	6	6	6	7	7	7	8	8	8	9	9
	Dwadsamsa	1	2	2	2	3	3	4	4	5	5	6	6	6	7	7	7	8	8	9	9	10	10	11	11	11	12
	Trisamsa	1	1	1	1	11	11	11	11	9	9	9	9	9	9	9	9	9	3	3	3	3	3	7	7	7	7
TAURUS	Hora	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Drekana	2	2	2	2	2	2	2	2	6	6	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	10
	Saptamsa	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	1	1	1	1	2	2	2
	Navamsa	10	10	11	11	11	12	12	12	1	1	1	1	2	2	3	3	3	3	4	4	4	5	5	5	6	6
	Dwadsamsa	2	3	3	3	4	4	5	5	6	6	7	7	7	8	8	8	9	9	10	10	11	11	12	12	12	1
	Trisamsa	2	2	2	2	6	6	6	6	12	12	12	12	12	12	12	12	12	10	10	10	10	10	8	8	8	8
GEMINI	Hora	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
	Drekana	3	3	3	3	3	3	3	3	7	7	7	7	7	7	7	7	7	7	11	11	11	11	11	11	11	11
	Saptamsa	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	•7	7	8	8	8	9	9	9	9
	Navamsa	7	7	8	8	8	9	9	9	10	10	10	10	11	11	12	12	12	12	1	1	1	2	2	2	3	3
	Dwadsamsa	3	4	4	4	5	5	6	6	7	7	8	8	8	9	9	9	10	10	11	11	12	12	1	1	1	2
	Trisamsa	1	1	1	1	11	11	11	11	9	9	9	9	9	9	9	9	9	9	3	3	3	3	3	7	7	7
CANCER	Hora	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Drekana	4	4	4	4	4	4	4	4	8	8	8	8	8	8	8	8	8	8	12	12	12	12	12	12	12	12
	Saptamsa	10	10	10	11	11	11	11	12	12	12	12	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4
	Navamsa	4	4	5	5	5	6	6	6	7	7	7	7	8	8	9	9	9	9	10	10	10	11	11	11	12	12
	Dwadsamsa	4	5	5	5	6	6	7	7	8	8	9	9	9	10	10	10	11	11	12	12	1	1	2	2	2	3
	Trisamsa	2	2	2	2	6	6	6	6	12	12	12	12	12	12	12	12	12	12	10	10	10	10	10	8	8	8

SAPTAVARGA CHARTS

Note : 1. Hora; 2. Drekana, 3. Saptamsha 4. Navamsa 5. Dwadsamsa 6. Trisamsa

SIGNS	Deg. (°)	2	3	4	5	6	7	8	10	12	12	12	13	15	16	17	17	18	20	21	22	23	25	25	26	27	30
	Mt. (')	30	20	17	0	40	30	34	0	0	30	51	20	0	40	8	30	0	0	25	30	20	0	42	40	30	0
	Sec (")	0	0	9	0	0	0	17	0	0	0	26	0	0	0	34	0	0	0	43	0	0	0	51	0	0	0
LEO	Hora	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
	Drekana	5	5	5	5	5	5	5	5	9	9	9	9	9	9	9	9	9	9	1	1	1	1	1	1	1	1
	Saptamsa	5	5	5	6	6	6	6	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11
	Navamsa	1	1	2	2	2	3	3	3	4	4	4	4	5	5	6	6	6	6	7	7	7	8	8	8	9	9
	Dwadsamsa	5	6	6	6	7	7	8	8	9	9	10	10	10	11	11	11	12	12	1	1	2	2	3	3	3	4
	Trisamsa	1	1	1	1	11	II	11	11	9	9	9	9	9	9	9	9	9	3	3	3	3	3	7	7	7	7
VIRGO	Hora	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Drekana	6	6	6	6	6	6	6	6	10	10	10	10	10	10	10	10	10	10	2	2	2	2	2	2	2	2
	Saptamsa	12	12	12	1	1	1	1	2	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6
	Navamsa	10	10	11	11	11	12	12	12	1	1	1	1	2	2	3	3	3	3	4	4	4	5	5	5	6	6
	Dwadsamsa	6	7	7	7	8	8	9	9	10	10	11	11	11	12	12	12	1	1	2	2	3	3	4	4	4	5
	Trisamsa	2	2	2	2	6	6	6	6	6	12	12	12	12	12	12	12	12	12	10	10	10	10	8	8	8	8
LIBRA	Hora	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
	Drekana	7	7	7	7	7	7	7	7	11	11	11	11	11	11	11	11	11	11	3	3	3	3	3	3	3	3
	Saptamsa	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	1	1	1
	Navamsa	7	7	8	8	8	9	9	9	10	10	10	10	11	11	12	12	12	12	1	1	1	2	2	2	3	3
	Dwadsamsa	7	8	8	8	9	9	10	10	11	11	12	12	12	1	1	1	2	2	3	3	4	4	5	5	5	5
	Trisamsa	1	1	1	1	11	11	11	11	9	9	9	9	9	9	9	9	9	3	3	3	3	3	7	7	7	7
SCORPIO	Hora	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Drekana	8	8	8	8	8	8	8	8	12	12	12	12	12	12	12	12	12	4	4	4	4	4	4	4	4	4
	Saptamsa	2	2	2	3	3	3	3	4	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8	8
	Navamsa	4	4	5	5	5	6	6	6	7	7	7	7	8	8	9	9	9	9	10	10	10	11	11	11	12	12
	Dwadsamsa	8	9	9	9	10	10	11	11	12	12	1	1	1	2	2	2	3	3	4	4	5	5	6	6	6	7
	Trisamsa	2	2	2	2	6	6	6	6	6	12	12	12	12	12	12	12	12	12	10	10	10	10	8	8	8	8

SAPTAVARGA CHARTS

Note : 1. Hora; 2. Drekana, 3. **Saptamsha** 4. Navamsa 5. Dwadasamsa 6. Trisamsa

SIGNS	Deg. (°) Mt. (•) Sec (")	2 30 0	3 20 0	4 17 9	5 0 0	6 40 0	7 30 0	8 34 17	10 0 0	12 0 0	12 30 0	12 51 26	13 20 0	15 0 0	16 40 0	17 8 34	17 30 0	18 0 0	20 0 0	21 25 43	22 30 0	23 20 0	25 0 0	25 42 51	26 40 0	27 30 0	30 0 0
SAGITTARIUS	Hora	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
	Drekana	9	9	9	9	9	9	9	9	1	1	1	1	1	1	1	1	1	1	1	5	5	5	5	5	5	5
	Saptamsa	9	9	9	10	10	10	10	11	11	11	11	12	12	12	12	1	1	1	1	1	2	2	2	3	3	3
	Navamsa	1	1	2	2	2	3	3	3	4	4	4	4	5	5	6	6	6	6	7	7	7	7	8	8	9	9
	Dwadasamsa	9	10	10	10	11	11	12	12	1	1	2	2	3	3	3	4	4	5	5	6	6	6	7	7	7	8
	Trisamsa	1	1	1	1	11	11	11	11	9	9	9	9	9	9	9	9	9	3	3	3	3	3	3	7	7	7
CAPRICORN	Hora	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Drekana	10	10	10	10	10	10	10	10	2	2	2	2	2	2	2	2	2	2	2	6	6	6	6	6	6	6
	Saptamsa	4	4	4	5	5	5	5	6	6	6	6	7	7	7	7	8	8	8	8	9	9	9	10	10	10	10
	Navamsa	10	10	11	11	11	12	12	12	1	1	1	1	2	2	3	3	3	3	4	4	4	5	5	5	5	6
	Dwadasamsa	10	11	11	11	12	12	1	1	2	2	3	3	3	4	4	4	5	5	6	6	7	7	8	8	8	8
	Trisamsa	2	2	2	2	6	6	6	6	6	12	12	12	12	12	12	12	12	12	10	10	10	10	8	8	8	8
AQUARIUS	Hora	5	5	5	5	5	5	5	5	5	5	5	5	5	4	4	4	4	4	4	4	4	4	4	4	4	4
	Drekana	11	11	11	11	11	11	11	11	3	3	3	3	3	3	3	3	3	3	3	7	7	7	7	7	7	7
	Saptamsa	11	11	11	12	12	12	12	1	1	1	1	2	2	2	2	3	3	3	3	3	4	4	4	5	5	5
	Navamsa	7	7	8	8	8	9	9	9	10	10	10	10	11	11	12	12	12	12	1	1	1	2	2	2	3	3
	Dwadsamsa	11	12	12	12	1	1	2	2	3	3	4	4	4	5	5	5	6	6	7	7	8	8	9	9	9	10
	Trisamsa	1	1	1	1	11	11	11	11	9	9	9	9	9	9	9	9	9	3	3	3	3	3	7	7	7	7
PISCES	Hora	4	4	4	4	4	4	4	4	4	4	4	4	4	5	5	5	5	5	5	5	5	5	5	5	5	5
	Drekana	12	12	12	12	12	12	12	12	4	4	4	4	4	4	4	4	4	4	4	8	8	8	8	8	8	8
	Saptamsa	6	6	6	7	7	7	7	8	8	8	8	9	9	9	9	10	10	10	10	11	11	11	12	12	12	12
	Navamsa	4	4	4	5	5	5	6	6	7	7	7	7	8	8	9	9	9	9	10	10	10	11	11	11	12	12
	Dwadsamsa	11	12	12	12	1	1	2	2	3	3	4	4	4	5	5	5	6	6	7	7	8	8	9	9	9	10
	Trisamsa	2	2	2	2	6	6	6	6	6	12	12	12	12	12	12	12	12	12	10	10	10	10	8	8	8	8

Index